2. Alternatives

2. Alternatives

2.1 Project Termini

The northern terminus of the proposed SR 509 mainline under all build alternatives would be approximately 1,700 feet north of South 188th Street/12th Place South, where the existing SR 509 freeway ends. The intent of the SR 509: Corridor Completion/I-5/South Access Road Project is to connect the new roadway with the existing facility at its current terminus. The SR 509 mainline would connect with I-5 between approximately South 211th Street and South 214th Street, depending on the build alternative.

The northern terminus of the South Access Road under all build alternatives would generally be at the south end of the existing upper and lower terminal drives at Sea-Tac Airport. The South Access Road would connect with the SR 509 mainline between South 200th and South 209th streets, depending on the specific build alternative.

The southern terminus of the entire project would be where a southbound I-5 auxiliary lane would match with an auxiliary lane to be provided under the Sound Transit I-5 @ South 317th Street Direct Access Ramp project at approximately South 310th Street.

2.2 Alternatives Considered But Rejected

The National Environmental Policy Act (NEPA) and corresponding Council on Environmental Quality (CEQ) regulations require development and consideration of reasonable alternatives that represent a range of possibilities to arrive at a proposed action. The alternatives are the basis for the subsequent comparative analysis of environmental consequences. The build alternatives considered in this FEIS represent different SR 509 extension and South Access Road alignments with different points of connection between SR 509 and the South Access Road and between SR 509 and I-5. All of the build alternatives address, in varying degrees, the purpose of and need for the action. These build alternatives are the result of an extensive screening process and reflect considerable public comment, traffic and environmental analyses, and design refinements. As required by NEPA, a No Action Alternative—in this case, one that assumes that neither the SR 509 extension nor the South Access Road would be built (although other planned local and regional transportation improvement projects could be implemented)—is also considered and analyzed in this FEIS. It is evaluated so that the level of impacts from any of the build alternatives can be clearly distinguished from the level of impacts that would occur without the proposed action.

2.2.1 Development and Screening of Corridor Alternatives for Tier 1 DEIS

The SR 509/South Access Road Corridor Project Draft EIS and Section 4(f) Evaluation (1995 DEIS) (FHWA et al. 1995) was intended to be the first tier of a two-tiered environmental evaluation process. The first tier examined wide corridors (general pathways), within which a more detailed analysis (Tier 2) would be conducted to define specific road alignments.

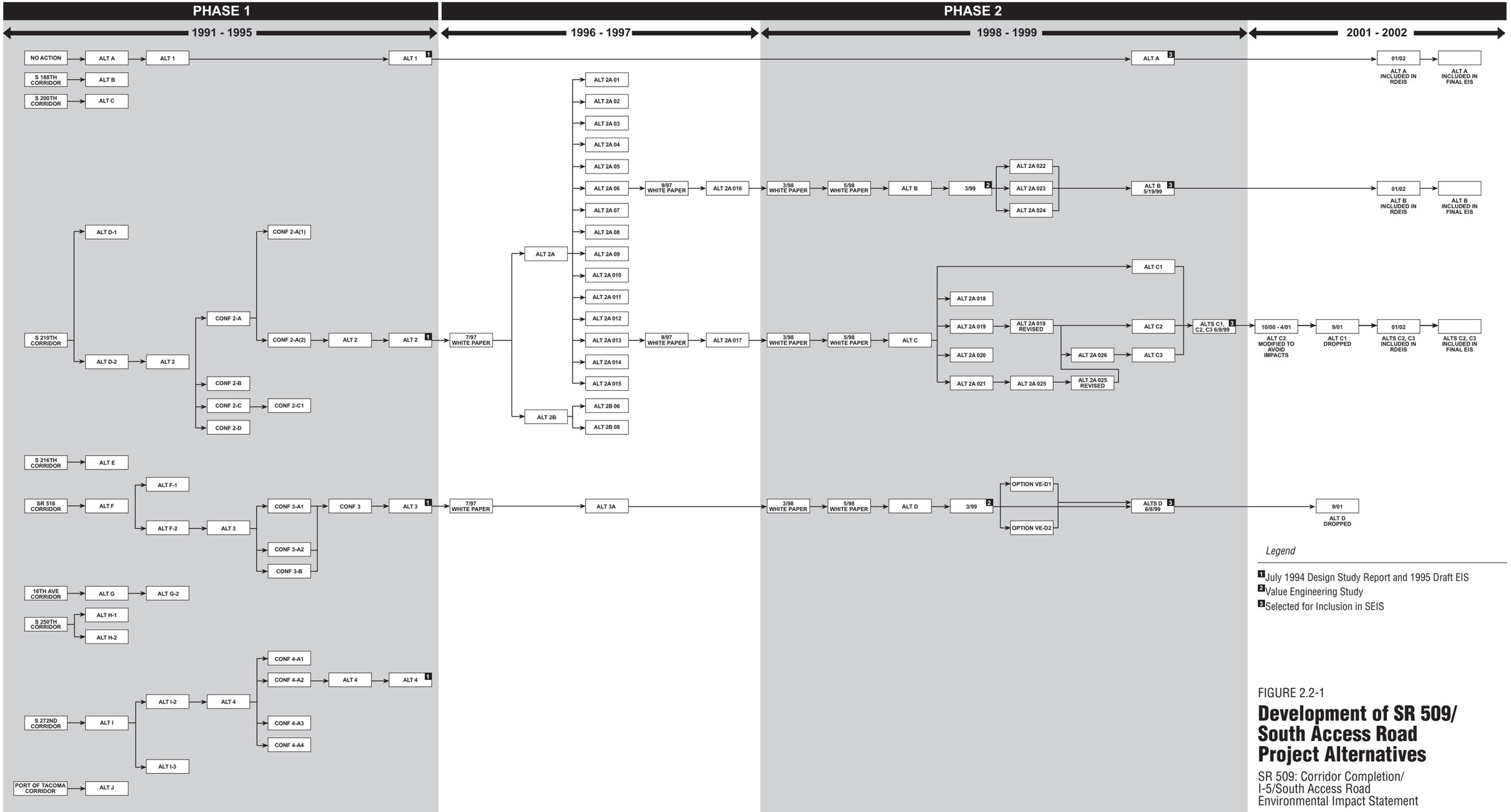
A two-stage screening process was used to identify the alternatives to be analyzed in the Tier 1 DEIS (Figure 2.2-1). Stage 1 involved the identification of 11 corridor build alternatives, 9 of which had been developed in previous reports and studies. Fifteen environmental and construction evaluation criteria were used in their screening, ranging from wetland impacts to effects on other elements of the existing transportation system. These 11 alternatives, plus the No Action Alternative, were presented to the public at an open house on May 6, 1992, and to public agency representatives on May 7, 1992. Based on the input received and the results of a workshop with WSDOT representatives and the Steering Committee (composed of staff members and participating agencies) on May 13, 1992, the 11 alternatives were each assigned an overall ranking and the "best" six were presented to the public at an open house on June 1, 1992. This open house concluded the Stage 1 screening process.

During Stage 2, the remaining six action alternatives were defined graphically and evaluated qualitatively, using 15 more detailed criteria. As during Stage 1, qualitative observations of each alternative for each evaluation category and its criteria were formulated and an overall ranking was assigned to each alternative by category during a Steering Committee workshop conducted on July 1, 1992.

The Stage 2 screening process reduced the number of corridor alternatives to three:

- Alternative 1 (No Action)
- Corridor Alternative 2 (intersecting I-5 at South 210th Street)
- Corridor Alternative 3 (intersecting I-5 at SR 516)
- Corridor Alternative 4 (intersecting I-5 near South 272nd Street)

These alternatives were presented to the public at a NEPA Scoping Meeting on September 30, 1992, and to public agency representatives on October 1, 1992. These meetings concluded the Stage 2 screening process and initiated the preparation of the 1995 DEIS (FHWA et al. 1995).



Legend

1 July 1994 Design Study Report and 1995 Draft EIS
2 Value Engineering Study
3 Selected for Inclusion in SEIS

FIGURE 2.2-1

Development of SR 509/ South Access Road Project Alternatives

SR 509: Corridor Completion/
I-5/South Access Road
Environmental Impact Statement

Public and agency comments on the DEIS were received in writing and at a public hearing held on January 10, 1996. In reviewing the comments, the Steering Committee concluded that they could be more fully addressed if finer detail were developed. This led to a decision to prepare the second-tier environmental document, addressing specific project-level alignments, in more detail within a Revised DEIS, rather than preparing a Final Corridor EIS.

2.2.2 Development and Screening of Alternative Project-Level Alignments for the Project-Level EIS

Subsequent to the publication of the corridor-level DEIS in December 1995, the alternatives were further evaluated. This reevaluation was initially directed by advice from the FHWA and was intended to ensure that the alternatives to be included in the project-level EIS were reasonable, avoided or minimized impacts as much as possible, and were not in some way fatally flawed. As a result of this process, corridor Alternative 4 was dropped from further consideration because of a combination of substantial impacts to two Section 4(f) resources—Des Moines Creek Park and Zenith Park—and indication from the United States Army Corps of Engineers (USACOE) that the impacts to a large Category 1 wetland south of South 260th Street were so substantial that it was unlikely that the alternative would receive permit approval. Please refer to Chapter 4 for a discussion of Section 4(f) resources in the project area.

Refinement of Remaining Corridor Alternatives

Corridor Alternative 2

Corridor Alternative 2 was revised (referred to as Alternative 2A) to avoid or greatly minimize the impacts on Des Moines Creek Park. In the corridor Alternative 2, there was an interchange within the boundaries of Des Moines Creek Park. However, there were only minimal intrusions into the restricted Sea-Tac Airport Runway Protection Zone (RPZ) at the end of the airport's main runway (Runway 16L/34R). Because of comments received from the Department of Interior concerning the impacts on Des Moines Creek Park and the need to avoid or minimize those impacts, the SR 509 Executive Committee (composed of elected officials and WSDOT's northwest regional administrator) decided to develop options with no or minimal park impacts. To do this, portions of the roadway had to be aligned to the north and within the RPZ.

Initially, nine optional project-level alignments of corridor Alternative 2 were developed and evaluated. Each option was a sequential refinement of a previously conceived option and included different designs for both SR 509 and the South Access Road. The series of options were:

- Options 1, 2, and 7 envisioned that SR 509 and the South Access Road would intersect north of Des Moines Creek Park and South 200th Street and that the combined SR 509/South Access Road would then traverse in a southeasterly direction east of the park.

- Options 3, 4, 5, and 6 envisioned that SR 509 and the South Access Road would generally parallel each other on the west and east sides, respectively, of the park. SR 509 would cross through the park at its narrowest point in the vicinity of South 210th Street before eventually intersecting with the South Access Road east of the park.

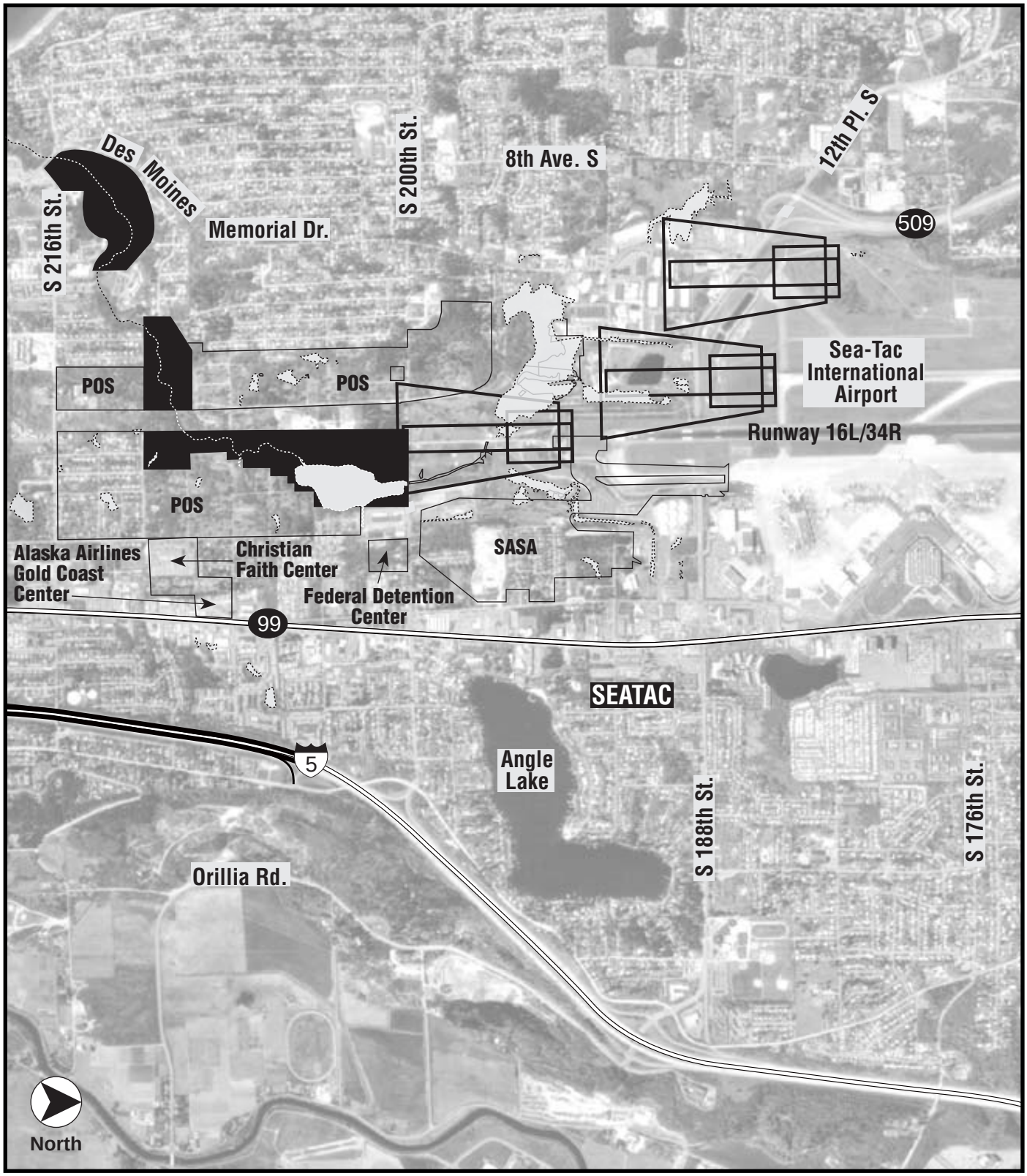
- Options 8 and 9 envisioned that the South Access Road would extend southwesterly to an interchange with SR 509 northwest of the park and that the combined roadway would extend southerly along the western boundary of the park before crossing through the park at its narrowest point in the vicinity of South 210th Street.

Each of these options was evaluated on the basis of specific environmental features and constraints (shown in Figure 2.2-2 or discussed in Chapter 3), including:

- Section 4(f) Property—Des Moines Creek Park
- Historic/archaeological resources
- Wetlands and streams
- Hazardous waste contaminated sites
- SASA
- Federal Detention Center (a facility for holding federal justice system detainees and inmates for a short time)
- FAA's Sea-Tac Airport RPZ
- Residences and businesses/potential displacements

As described in *White Paper: Evaluation of Alternative Alignments* (CH2M HILL July 1997), Options 6 and 8 were considered the most reasonable of the nine options because they minimized impacts relative to their predecessors and substantially minimized the corridor Alternative 2 impacts on Des Moines Creek Park. The other options were dropped from further consideration for a combination of reasons, including intrusions into the RPZ, impacts on residential neighborhoods, wetland impacts, impacts on the SASA, and poor traffic operations.

At the SR 509/South Access Road Executive Committee meeting on July 10, 1997, the committee directed that new design criteria be used to determine whether additional options could be developed to further minimize or avoid impacts. These criteria included a determination that the interchanges at South 200th Street with either SR 509 or the South Access Road were not necessary, nor was the accommodation of southbound traffic on the South Access Road to northbound SR 509. The committee also directed that, if



Legend

- Wetlands and Streams
- Runway Protection Zones
- Des Moines Creek Park
- **POS** Port of Seattle Redevelopment Area

FIGURE 2.2-2

Environmental Features

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement

other feasible options could be identified, they should be evaluated and compared with Options 6 and 8 on the basis of an expanded list of environmental features and constraints that included:

- Port of Seattle-owned redevelopment areas
- Christian Faith Center
- Noise-sensitive residential receptors

Based on the new design criteria, six additional options were developed and evaluated. Continuing with the same numbering system used during the previous phase of alternative refinement, these options were numbered 10 through 15.

- Options 10, 11, and 12 were variations of the 1995 DEIS Alternative 2 in that SR 509 would extend southerly and cross through Des Moines Creek Park in the vicinity of South 204th Street, eventually intersecting with the South Access Road east of the park.

- Options 13, 14, and 15 envisioned that SR 509 would extend southeasterly north of South 200th Street, "thread the needle" between the northeast corner of the park, the southwest corner of the SASA, and the western boundary of the Federal Detention Center. The South Access Road would skirt the western boundary of SASA (similar to Option 6) and intersect SR 509 in the vicinity of South 200th Street.

As described in *White Paper: Evaluation of Alternative 2A Options* (CH2M HILL September 1997), Option 13 was perceived as the best of the six new options. The other options were determined to be flawed for a combination of reasons, including intrusions into the RPZ, complicated traffic movements, impacts on Des Moines Creek Park, and residential displacements.

Because of the addition of the Christian Faith Center to the list of environmental features and constraints to be considered, Option 6, which originally directly impacted the Center's administrative/education building (now the Alaska Airlines Gold Coast Center), was re-evaluated and a new Option 16 was developed. Option 16 envisioned that the SR 509 alignment would be moved roughly 500 feet north of Option 6, thus avoiding any direct impact on the Christian Faith Center's building. Option 16 also reflected a slight adjustment (from Option 6) to the alignment of the South Access Road to stay clear of the FAA Object-Free Area (OFA), another restricted area at the end of Runway 16L/34R.

At the Executive Committee meeting on September 17, 1997, Option 6 was dropped from further consideration in favor of Option 16. Option 8 was also dropped in favor of other, more feasible options. Option 13 was the Committee's preliminarily preferred Alternative 2A option, but the

Committee also requested that additional refinements be made. Finally, the Executive Committee directed that the refined Options 13 and 16, along with a revised version of corridor Alternative 3 (referred to as Alternative 3A), be presented to the public before final designation of a preliminary preferred option.

Refinements were made to Option 13 in four areas:

- The SR 509 alignment was shifted eastward in the vicinity of the Des Moines Creek Park to eliminate direct impacts on the park; however, impacts on the SASA increased.

- A half-diamond interchange between SR 509 and 28th/24th Avenue South was added to serve traffic movements from the City of SeaTac to and from the south on SR 509.

- The SR 509/South Access Road interchange was grade-separated from South 200th Street to provide for traffic movements to and from the airport on the South Access Road. Option 13 had an at-grade intersection at South 200th Street that required traffic to stop at a signalized intersection before continuing on to Sea-Tac Airport. By changing this connection to a grade-separated interchange, traffic could proceed from northbound I-5 to Sea-Tac Airport without encountering a traffic signal.

- The westerly SR 509/South 200th Street interchange, to serve traffic movements from the airport and the City of SeaTac to and from the north on SR 509, was moved farther west to avoid the RPZ and the Hillgrove Cemetery.

These refinements to Option 13 produced Option 17. By shifting the SR 509 alignment in the vicinity of South 200th Street and including a grade separation at that interchange, the SR 509 mainline was forced farther north before turning westerly through the RPZ.

Corridor Alternative 3

As with the corridor Alternative 2, the corridor Alternative 3 underwent a similar re-evaluation. Whereas the corridor alternative diverged from the existing SR 509 right-of-way in the vicinity of South 200th Street and traversed diagonally across Des Moines Creek Park, Alternative 3A, the project-level alternative, was intended to avoid impacts on the park by staying within the right-of-way until roughly South 214th Street before turning in a southeasterly direction. This refinement was very similar to the Section 4(f) Avoidance Alternative 3 DW analyzed in the DEIS. Alternative 3A also reflected modification in the alignment of the South Access Road. Whereas originally the South Access Road would extend generally southerly and intersect with SR 509 in the vicinity of South 205th Street, Alternative

3A envisioned that the roadway would extend southwesterly through the RPZ, pass under SR 509 north of South 200th Street, and eventually intersect with SR 509 in the vicinity of South 208th Street.

Alternative 3A was subsequently refined to avoid property purchased by the City of Des Moines for use as a "sports park" located in the area southwest of the intersection of South 216th Street and 24th Avenue South. The SR 509 alignment was extended farther south (to roughly South 220th Street) within the existing SR 509 right-of-way before turning southeasterly toward I-5.

Presentation of Refined Alternatives

Options 16 and 17 of Alternative 2A and the revised Alternative 3A were presented to the public at an open house on February 26, 1998. Based on the public input received, the Executive Committee, at its meeting on April 8, 1998, identified Option 17 (now redesignated as Alternative C) as the preliminary preferred alternative to be analyzed in the project-level EIS. This alternative was selected as the preliminary preferred alternative because, in comparison to the other alternatives, it had the fewest impacts on natural environmental features, had the potential of being considered a Section 4(f) avoidance alternative, left the greatest amount of Port of Seattle-owned redevelopment area untouched, and appeared to be the most direct route to the traveling public. The Executive Committee also recommended that Option 16 (redesignated Alternative B) and 3A Revised (redesignated Alternative D) be carried into the project-level EIS, along with Alternative A (No Action).

FAA Opinion

On September 29, 1998, FAA transmitted its position on each of the three build alternatives regarding the RPZ. The FAA indicated that Alternative B was clearly outside the RPZ and was thus worthy of further consideration. FAA indicated that Alternative C could possibly be acceptable if a cover (tunnel) designed to protect the people under it from the errant landing of an aircraft were constructed where the roadway passed through the Extended OFA (XOFA), a subarea of the RPZ. FAA strongly encouraged that the road be located as far to the south end of the XOFA as feasibly possibly, suggesting that if the road were located in the southern one-third of the XOFA, FAA might accept such a proposal without the requirement for the cover. FAA indicated that Alternative D would traverse through the OFA, violating the FAA design standard of no roads in the OFA.

Value Engineering

With that guidance from FAA, WSDOT assembled a Value Engineering (VE) team in February 1999 comprised of WSDOT, FHWA, Port of Seattle, U.S. Department of Interior (National Park Service), and City of SeaTac and Des Moines staff. The intent of the VE team was to evaluate the project-level

EIS alternatives and to determine if they could be further improved in terms of performance, cost, and minimization or avoidance of impacts. The VE team recognized the cost implications of the construction of a tunnel through the XOFA (estimated at an additional $12 million) and the associated safety concerns (trapping motorists in the tunnel during a car fire, or smoke and flames drawn into the tunnel by the ventilation system if an aircraft crash occurred near the portal). The VE team concluded that the Alternative C roadway alignment needed to be relocated farther south in the XOFA. By doing so, however, the road was forced into Des Moines Creek Park. Avoidance of the park was a critical design constraint that had shaped the development of all build alternatives to that point in the environmental review process, primarily because of the strength of Section 4(f) and its requirement to select an alternative that avoids impacts to parks if determined feasible and prudent. The VE team concluded that that constraint was unreasonable considering the complexity of the project area and that, by adhering to that constraint, other adverse impacts could result. The VE team recommended that new options to Alternative C be developed without that constraint.

As a result, three new options to Alternative B (22, 23, and 24), four new options to Alternative C (18, 19, 20, and 21), and one new option to Alternative D (Option VE-D1) were identified and qualitatively screened. On April 23, 1999, the Steering Committee approved Options 19, 21, and 23 to be further studied; the Committee also decided that two new options should be created and carried forward—Option 25 (a progression from Option 21 that would move the alignment farther south) and Option VE-D2 (a hybrid of the northern half of VE-D1 and the southern half of Alternative D). In May 1999, the Steering Committee conducted a structured decision-making process to determine whether any of the remaining VE options were superior to the original alternatives and should, therefore, be evaluated in the project-level EIS instead. Each option was compared against its alternative of origin. For Alternatives B and D, it was concluded that the options did not offer enough of an advantage to warrant substitution of the originals. For Alternative C, Option 21 was dropped, but Options 19 and 25, along with the original alternative, which was a true Section 4(f) avoidance alternative, were recommended to be carried forward. The original Alternative C was then redesignated C1, Option 19 was redesignated C2, and Option 25 was redesignated C3.

Feasibility and Prudence of Alternatives C2 and C3

Both Alternatives C2 and C3 would directly impact Des Moines Creek Park as a result of the southern shift within the XOFA. Despite the impacts on the park, WSDOT considered both alternatives to be reasonable and prudent for analysis in the project-level EIS because they would avoid or minimize the magnitude of social, economic, environmental, and cost impacts caused by Alternative C1, including the safety risks and costs associated with the tunnel

through the XOFA and the impacts to Class I wetlands and to SASA. (It should be noted that Alternative B would also directly impact Des Moines Creek Park at a different location than Alternatives C2 and C3.) On July 19, 1999, WSDOT met with Port of Seattle representatives and local officials with jurisdiction from the Cities of SeaTac and Des Moines (in other words, those who own, operate, and maintain Des Moines Creek Park). The consensus of that group was that, despite the impacts on the park, Alternatives C2 and C3 appeared feasible and prudent and should be included in the project-level EIS, as long as proposed mitigation was implemented by WSDOT as part of the overall project. The proposed mitigation included the northward extension of the Des Moines Creek Trail to South 188th Street/12th Place South (where it could connect with other existing trails or other planned regional trail improvements) and the provision of replacement acreage from the existing and unused state right-of-way equaling the amount of impacted parkland. At a meeting on August 26, 1999, FHWA concurred that even though Alternative C1 was a true Section 4(f) avoidance alternative, it was probably not a prudent avoidance alternative. FHWA also concurred with the inclusion of the nonavoidance alternatives (Alternatives C2 and C3) in the project-level EIS.

Public and Involved Agency Input

The five potential alternatives—B, C1, C2, C3, and D—were presented to the public at an open house on October 27, 1999. An informal vote based on written comments received at, and subsequent to, the open house indicated that Alternative C2 was most preferred, closely followed by Alternatives C3 and D.

At its November 17, 1999, meeting, the Executive Committee adopted Alternative C2 as the new preliminary preferred alternative (as opposed to Alternative C in April 1998). In its adoption, the committee indicated that its preference was based on the facts that Alternative C2:

- would not require a tunnel through the XOFA
- would have the best geometric configuration
- would result in the least amount of new impervious surface area
- would be the least expensive

In January 2000, the NEPA/SEPA/404 Merger Agreement Signatory Agency Committee (SAC) concurred with the alternatives to be evaluated in the project-level EIS.

Definition of I-5 Improvements

In January 2001, WSDOT assembled a second VE team to study the SR 509 southbound merge with I-5, traffic flow along I-5 south of that new interchange, and the need to rebuild the SR 5/SR 516 interchange. The VE

team concluded that in addition to two SR 509 southbound collector/ distributor (C/D) lanes from the SR 509/I-5 interchange to the SR 516/I-5 interchange(applicable to Alternatives B, C1, C2, and C3), there needed to be not one but two additional southbound auxiliary lanes and one northbound auxiliary lane between SR 516 and South 272nd Street (all build alternatives), and that one additional southbound auxiliary lane would be required between South 272nd Street interchange and South 310th Street (all build alternatives). These improvements to the alternatives were intended to improve traffic operations along I-5, to minimize economic and social impacts along and adjacent to the I-5 corridor (especially within the Des Moines Pacific Ridge Neighborhood Improvement Plan limits), and to not preclude a future connection to the City of Kent's South 228th Street corridor extension. The southern terminus of the project was subsequently revised as noted in the *Project Termini* section earlier.

Elimination of Alternatives C1 and D

Based on further consultation and coordination between WSDOT and other project partners, local agencies, and resource permitting agencies, WSDOT concluded that Alternatives C1 and D had clear conflicts with other essential regional projects important to the environment and economy, and would cause substantial impacts on water resources that the other build alternatives would avoid or lessen. Furthermore, WSDOT determined that given these conflicts and impacts, Alternatives C1 and D were not reasonable or permittable and should be eliminated from further evaluation in the project level EIS. The Executive Committee concurred with this recommendation on March 29, 2001. WSDOT's position was based on the following conclusions:

- Alternative C1 would impact almost 7 acres of a Class 1 wetland and its buffer area (approximately 5 acres under Alternative D). Both the USACOE and the Washington State Department of Ecology (regulatory agencies for Section 404 Wetlands and Section 401 Water Quality permits) expressed concerns about the impacts on this wetland and the resulting permitting difficulties.

- The wetland noted above is a critical component of the King County Des Moines Creek Basin Plan; the plan calls for the modification and use of portions of the wetland as a regional detention pond and water quality treatment facility. Alternatives C1 and D would reduce the wetland's intended capacity with little or no opportunity for expansion. As such, Alternatives C1 and D were not supported by any of the Des Moines Creek Basin Plan partnership agencies (King County, City of SeaTac, City of Des Moines, and Port of Seattle).

- Alternative C1 would cross the northern two-thirds of the XOFA and require an approximately 1,000-foot-long tunnel. In addition to the safety and cost issues associated with such a tunnel, any tunnel longer than 800

feet would require ventilation and fire control systems. The associated exhaust vents would be located on top of the tunnel; however, FAA indicated that surface structures such as vents would be prohibited within the XOFA.

- Alternative C1 would cross through a large portion of the Port's SASA and render the remaining portion of the area unusable to accommodate the intended aircraft and facilities. Because this area needs to be runway accessible and there are no other identified areas in the vicinity that meet this requirement, the Port opposed Alternative C1.

- Due to its longer length, Alternative D would create more new impervious surface area than any of the other alternatives. Minimizing impervious surface area has been emphasized by the Washington State Department of Ecology (Ecology) in terms of maintaining water quality standards, and by the U.S. National Marine Fisheries Service (NMFS) as being important in aiding salmon recovery. Because of the more stringent standards included with Ecology's 2001 *Stormwater Management Manual for the Puget Sound Basin*, efforts to minimize the amount of new impervious surface area have taken on added importance.

The rationale for eliminating the alternatives is documented in a position paper entitled *Screening of Alternatives C1 and D*, dated June 2001. In September 2001, WSDOT received concurrence from the NEPA/SEPA/404 Merger Agreement SAC, approving Alternatives B, C2, and C3 for evaluation in the project-level EIS (the SAC had previously concurred with Alternatives B, C1, C2, C3, and D in January 2000).

2.3 Alternatives Analyzed in the FEIS

The SR 509: Corridor Completion/I-5/South Access Road Project includes improving regional highway connections with an extension of existing SR 509 to serve future transportation needs in southwest King County and to enhance southern access to Sea-Tac Airport. (The location of the project area is shown in Figure 2.3-1 and project area vicinity is shown in Figure 2.3-2.) The project includes extending the SR 509 freeway from South 188th Street/12th Place South to a connection with I-5 in the vicinity of South 210th Street; improving I-5 between South 210th and South 310th streets; improving southern access to and from Sea-Tac Airport by a new roadway (the South Access Road); and improving related local traffic circulation patterns.

As part of the EIS process to examine reasonable alternatives, as required by NEPA and the State Environmental Policy Act (SEPA), three build alternatives for the SR 509 mainline/I-5/South Access Road and a No Action Alternative are examined in this FEIS. In addition, there are three design

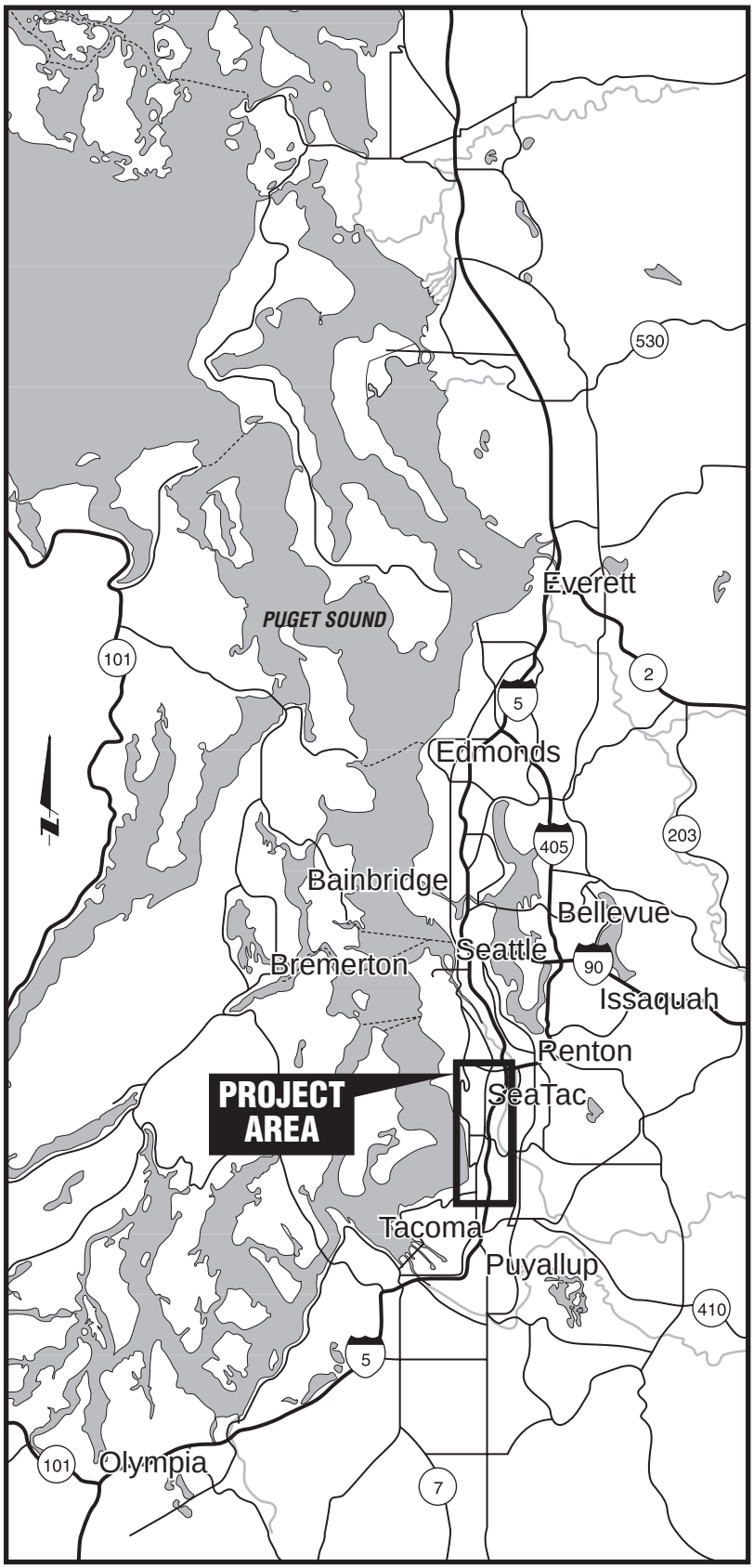
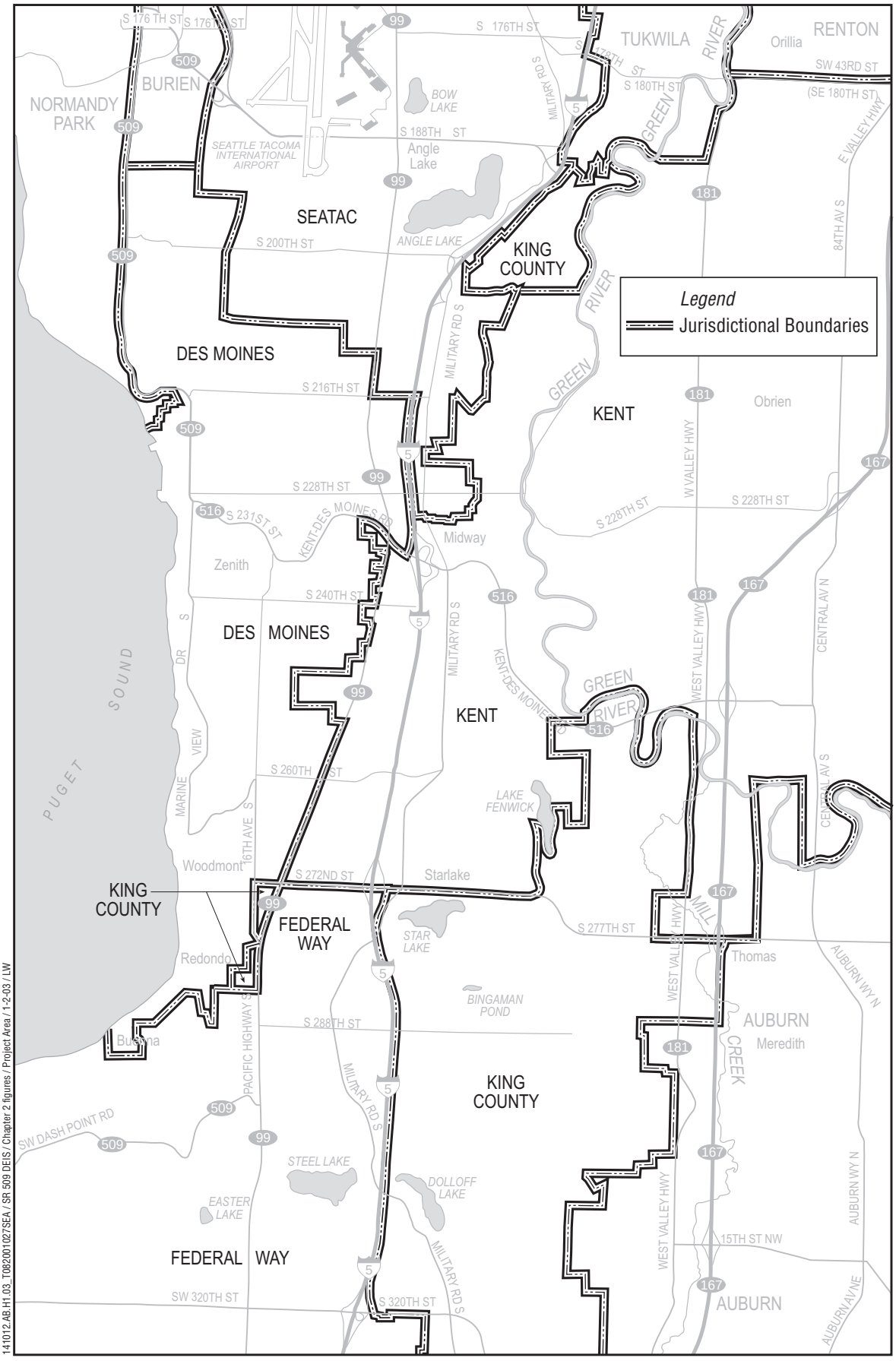


FIGURE 2.3-1

Project Area Location Map

SR 509: Corridor Completion/
I-5/South Access Road
Environmental Impact Statement



0 1900 3800
Scale in Feet

North

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FIGURE 2.3-2

Project Area

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement

options for the 1,000-foot connection of the South Access Road to the airport terminal roadways.

The following discussion first provides a description of the No Action Alternative, and then focuses on features of the project that are common to all the build alternatives, followed by an identification of features unique to each build alternative.

2.3.1 Alternative A (No Action)

The No Action Alternative (Figure 2.3-3) represents the baseline conditions assumed to exist in the future regardless of whether or not the proposed action is constructed. Inclusion of the No Action Alternative provides a "yardstick" against which to measure the potential effects of the various build alternatives. It also acknowledges that local jurisdictions, as well as the State of Washington, have the option not to go forward with the proposed project.

Under the No Action Alternatives, no new major construction activities described as the proposed project would occur. Short-term minor construction necessary for continued operation of existing roadway facilities would be accomplished, and minor safety improvements could be constructed as required. In addition, other funded or planned baseline transportation improvement projects within the project area (listed at the bottom of Figure 2.3-3) are assumed to be operational in the year 2020, as well as other projects such as development of the SASA, the third runway at Sea-Tac Airport, redevelopment within the Port of Seattle Noise Remedy Program area, the Des Moines Creek Basin Plan, the City of Des Moines Pacific Ridge Neighborhood Improvement project, the Des Moines Creek Basin Plan, and the City of SeaTac Central Business District (CBD) and Aviation Business Center projects. These projects have already been, or will be, subject to separate environmental reviews; analysis of their specific impacts is not included in this FEIS; however, these projects are considered in the analysis of secondary and cumulative impacts in this FEIS.

2.3.2 Features Common to All Build Alternatives

Each alternative for the SR 509 freeway extension would originate approximately 1,700 feet north of South 188th Street/12th Place South, where the existing SR 509 freeway terminates in a trumpet (T-shaped) interchange. Here, the existing interchange would be replaced with a single point urban interchange, with SR 509 passing over the intersecting street. For approximately the first mile of the project, the build alternatives would stay mostly within existing WSDOT-owned SR 509 right-of-way; points of departure from the existing right-of-way would vary with each alternative. The southern terminus of the South Access Road would connect with the SR 509 freeway extension; the location and design of this connection would vary with each alternative. The northern terminus of the South Access Road would

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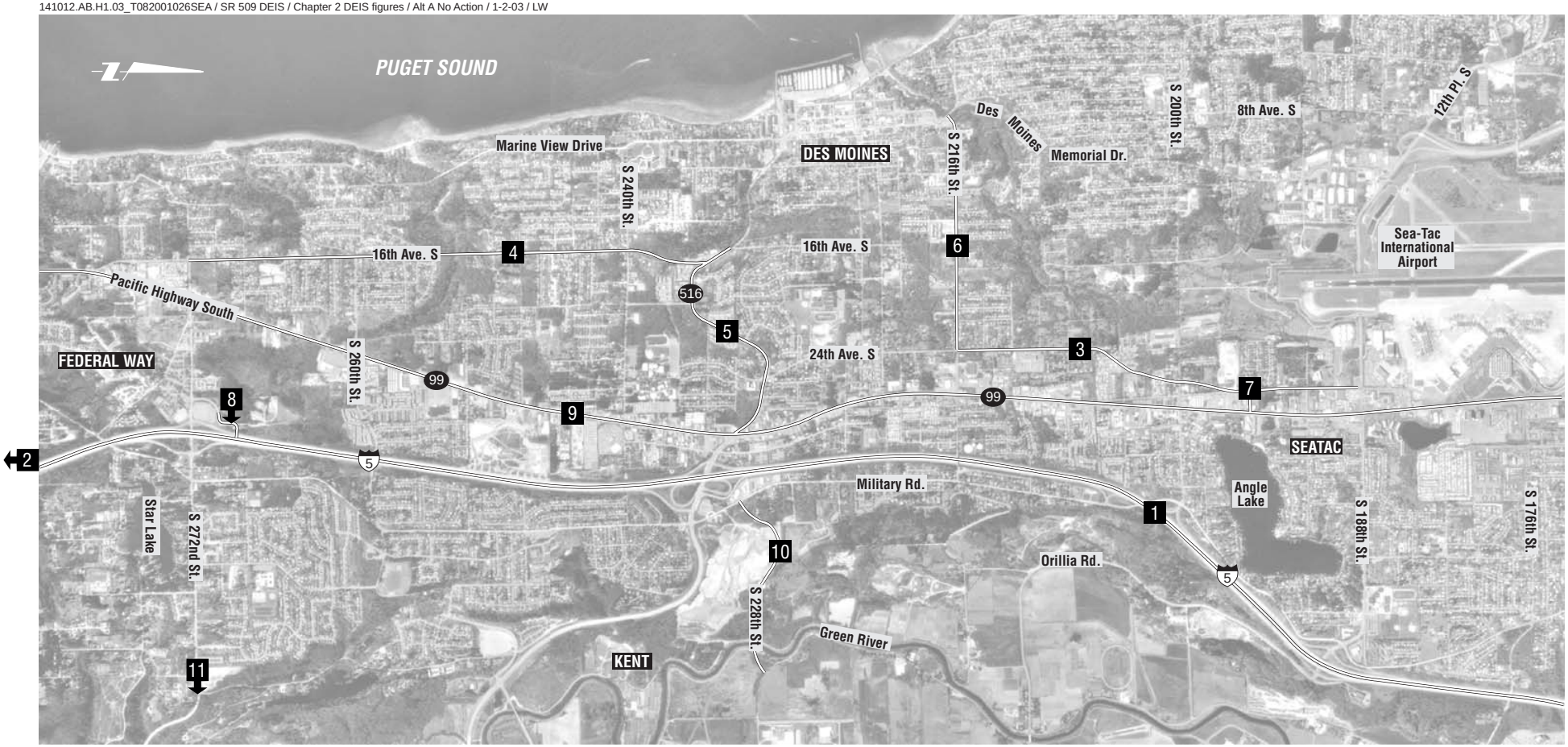


Legend

Baseline Projects by others

0 1/4 1/2 3/4 1 MILES

Baseline Projects Assumed for No Action Alternative.

1. I-5 HOV Lanes
2. I-5 @ S. 317th Street Direct Access Ramp
3. 28th/24th Avenue S. Arterial (Phase 1 completed – S. 188th to S. 204th Streets)
4. 16th Avenue S.
5. Kent-Des Moines (SR 516) Road
6. S. 216th Street
7. S. 195th Street
8. I-5 @ S. 272nd Street In-Line Station
9. Pacific Highway S./International Boulevard (SR 99) (Phases 1 and 2 completed – S. 170th to S. 200th Streets)
10. S. 228th Street
11. S. 272nd/S. 277th Street Corridor

FIGURE 2.3-3

Alternative A (No Action)

SR 509: Corridor Completion/I-5/South Access Road Environmental Impact Statement

be approximately 1,000 feet north of South 188th Street. Improvements to I-5 would be the same for all build alternatives.

SR 509 Mainline/South Access Road

The configuration of the SR 509 freeway extension would be six lanes: two general purpose travel lanes and an inside HOV lane in each direction. The South Access Road would consist of two general purpose lanes in each direction, for a total of four lanes. In general, rights-of-way would be at least 200 feet wide for the SR 509 freeway extension and at least 120 feet wide for the South Access Road. The width of right-of-way required would vary along the lengths of these facilities because of changing topography and adjacent land uses, and would be considerably greater in interchange areas. In some places, the right-of-way would be narrowed to avoid or minimize impacts on environmentally sensitive areas and other physical features.

Preliminary design features common to all build alternatives include the following:

- The SR 509 freeway extension would be designed to LOS D and a speed of 70 miles per hour (mph); the South Access Road would be designed to LOS D and a speed of 35 to 45 mph.

- SR 509 and the South Access Road would be grade-separated from all streets classified as arterials.

- Interchange ramps, ramp terminals, and modifications to arterials within 300 feet of ramp terminals would be considered part of the proposed project and included within the proposed right-of-way. There would be interchanges at South 200th Street and 28th/24th Avenue South, but not at SR 99.

- The South Access Road would terminate at the SR 509 freeway extension in a “partial Y” interchange. This would provide a continuous flow of traffic between the two roadways in two directions (south and north) by use of a flyover ramp.

South Airport Link Design Options

The South Airport Link is the northern 1,000 feet of the South Access Road that would connect to the existing Airport Terminal Drive System. There are three design options for the South Airport Link. At the south end, each design option would cross beneath South 188th Street and the southeast corner of Sea-Tac Airport via a tunnel. At the north end, the design options would maintain both southbound and northbound connections from the upper and lower terminal drives. They would also provide a southbound connection to a future "south bypass" lane for routing southbound traffic from the north without entering the terminal drive network.

Design Option H0

To fit into a narrow area between Sea-Tac Airport and two existing hotels, Air Cargo Road and the South Access Road would be "stacked" for more than half of the distance between South 188th Street and the airport parking garage via a tunnel that would be longer than the one for Design Options H2-A and H2-B (Figure 2.3-4). The extended tunnel would be designed to be compatible with the Link light rail extension to South 200th Street. An "S" curve would be created within the tunnel segment of the roadway to accommodate the necessary road widths and alignment. Currently, no vehicular access to the airport terminal drives would be provided from South 188th Street. The existing intersection at South 182nd Street and International Boulevard (SR 99) would be closed and local access provided at South 170th and South 200th Streets.

Design Option H2-A

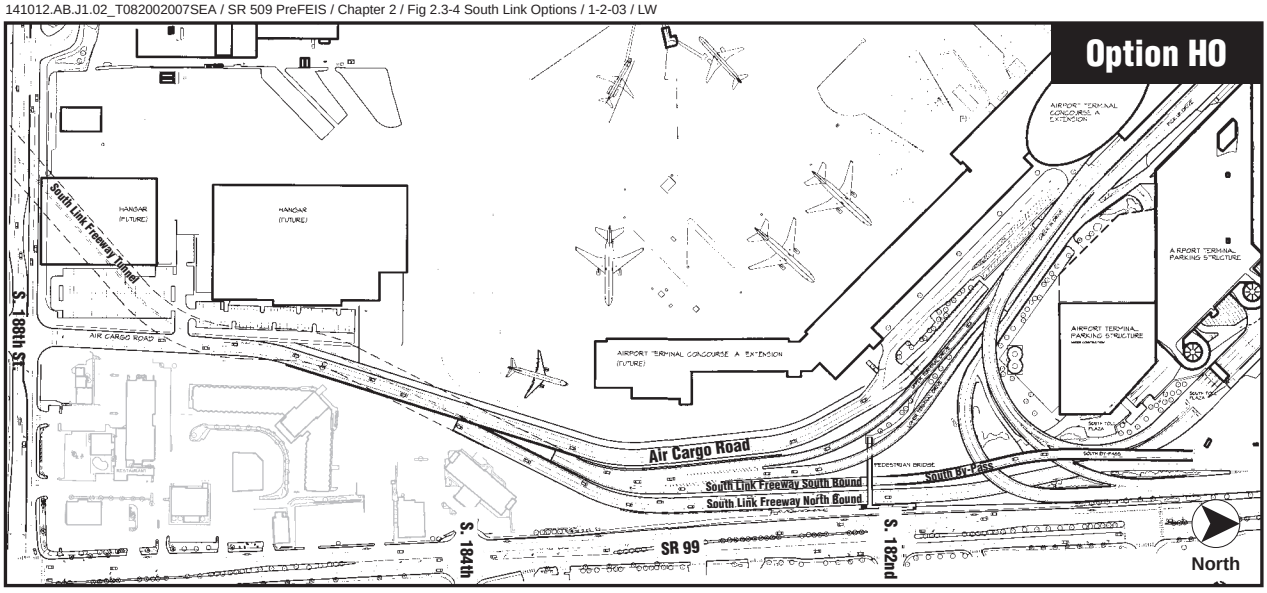
Under Design Option H2-A, Air Cargo Road and the southbound and northbound lanes of the South Airport Link would generally parallel each other and would be separated by medians (Figure 2.3-4). Air Cargo Road would run adjacent to the east edge of the airfield, followed to the east by the southbound and northbound lanes, respectively. The South Airport Link lanes would descend in elevation as they run from north to south, and Air Cargo Road would eventually cross over the top of them as they enter the tunnel. The tunnel entrance would be farther to the south than Design Option H0. Like Design Option H0, no vehicular access would be available for local traffic to replace the existing intersection at South 182nd Street.

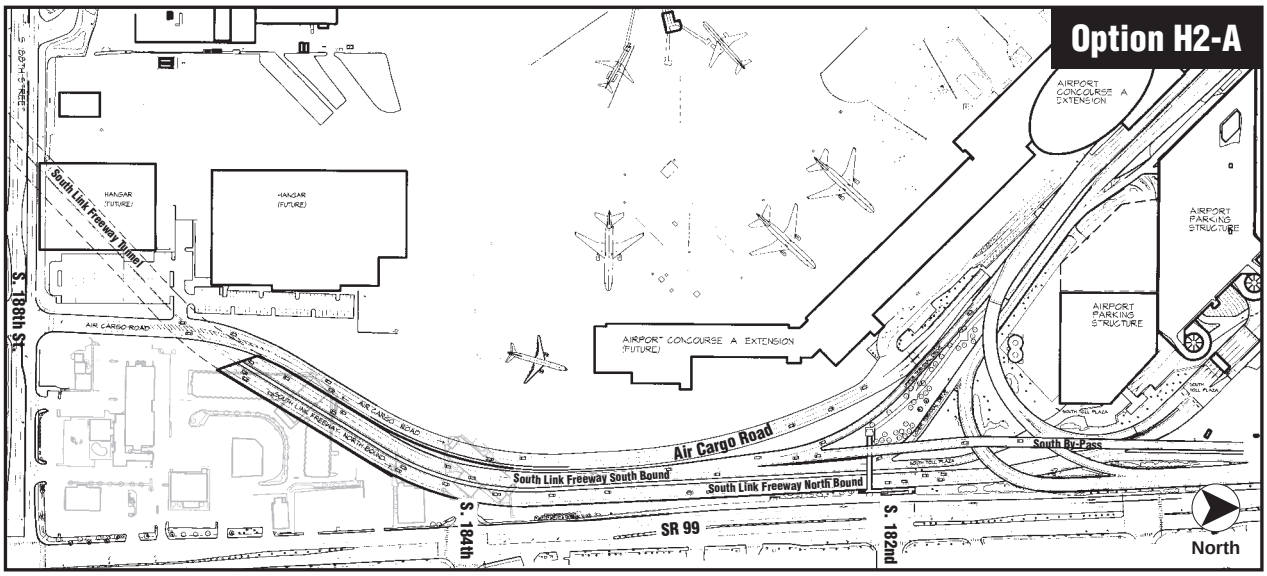
Design Option H2-B (Preferred)

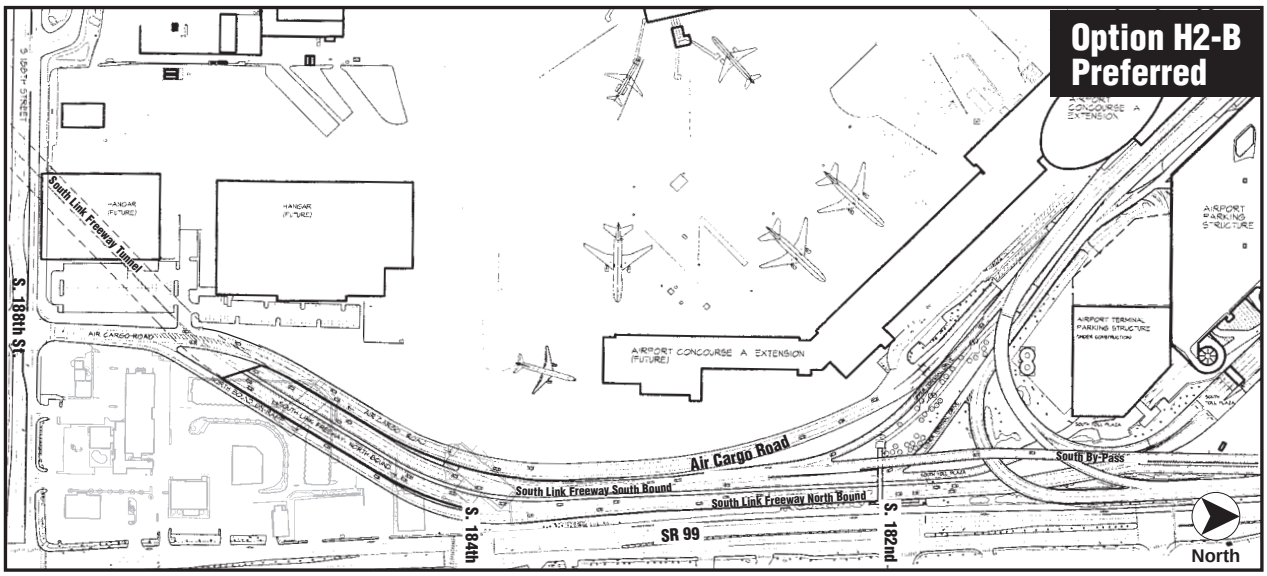
Design Option H2-B would be essentially the same as Design Option H2-A, except that it would provide local access routes only for northbound traffic at the intersection of South 188th Street and 28th Avenue South and would not provide a southbound ramp from the South Access Road (Figure 2.3-4). The local ramp would merge in the northbound direction on the east side of the northbound lanes (northbound traffic from the intersection), and also would merge with Air Cargo Road. The local access ramp would require a slight shift in the overall alignment, infringing into adjacent areas more than Design Option H2-A. All other features would be the same as Design Option H2-A.

I-5 Improvements

The SR 509 freeway extension would terminate at I-5 in a modified partial Y interchange, which would allow northbound I-5 traffic to continue north on SR 509 and southbound SR 509 traffic to continue south on I-5. In this configuration, the center HOV lanes of SR 509 would be grade-separated from the I-5 general purpose lanes, connecting directly with the interstate's







0 100 200
Approx.
Scale in Feet

FIGURE 2.3-4

South Airport Link Design Options

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement

center HOV lanes. SR 509 general purpose lanes would connect with new C/D lanes on either side of I-5, requiring additional grade separations (Figure 2.3-5).

Because of the close spacing of the proposed SR 509/I-5 interchange to existing I-5 interchanges, such as those at South 200th Street and SR 516, the project would necessitate a C/D system on I-5. On southbound I-5, two C/D lanes would extend from the convergence of SR 509 with I-5 to the SR 516 interchange (a distance that would vary among the build alternatives). From the SR 516 interchange to the South 272nd Street interchange, two new southbound auxiliary lanes would be constructed. Between South 272nd Street and approximately South 310th Street a new southbound auxiliary lane would be constructed to connect with the auxiliary lane to be provided by the Sound Transit I-5 @ South 317th Street Direct Access Ramp project. On northbound I-5, a new auxiliary lane would extend from South 272nd Street to the SR 516 interchange. Two northbound C/D lanes would start at the SR 516 interchange. Improvements would also be made to the on- and off-ramps at the SR 516 and South 272nd Street interchanges to alleviate conflicts between merging and exiting traffic. In addition, a South 228th Street extension and underpass would be constructed, providing a direct connection to northbound I-5 from South 228th Street and from southbound I-5 to South 228th Street.

The improvements to I-5 would cover approximately 6.7 miles.

2.3.3 Alternative B

Under Alternative B (Figure 2.3-6), SR 509 would extend southward from its existing terminus at South 188th Street/12th Place South and intersect with I-5 in the vicinity of South 210th Street. The SR 509 freeway extension would curve away from the existing WSDOT-owned right-of-way near South 196th Street, and continue south. The freeway extension and the South Access Road would generally parallel each other in a north-south orientation on the west and east sides of Des Moines Creek Park, respectively. SR 509 would pass beneath South 200th Street in a "tight" diamond interchange, which would minimize right-of-way width through the use of retaining walls to support the change in grade between interchange ramps and travel lanes. These retaining walls would help avoid or minimize impacts on surrounding land uses, including a residential area, Hillgrove Cemetery, and Port of Seattle-owned redevelopment land. Curving eastward near South 208th Street, the alignment would cross over Des Moines Creek on two separate bridges (to accommodate the SR 509 mainline and the ramps associated with the proposed intersection at 28th/24th Avenue South) and through Des Moines Creek Park at its narrowest point, thus minimizing impacts on that property.

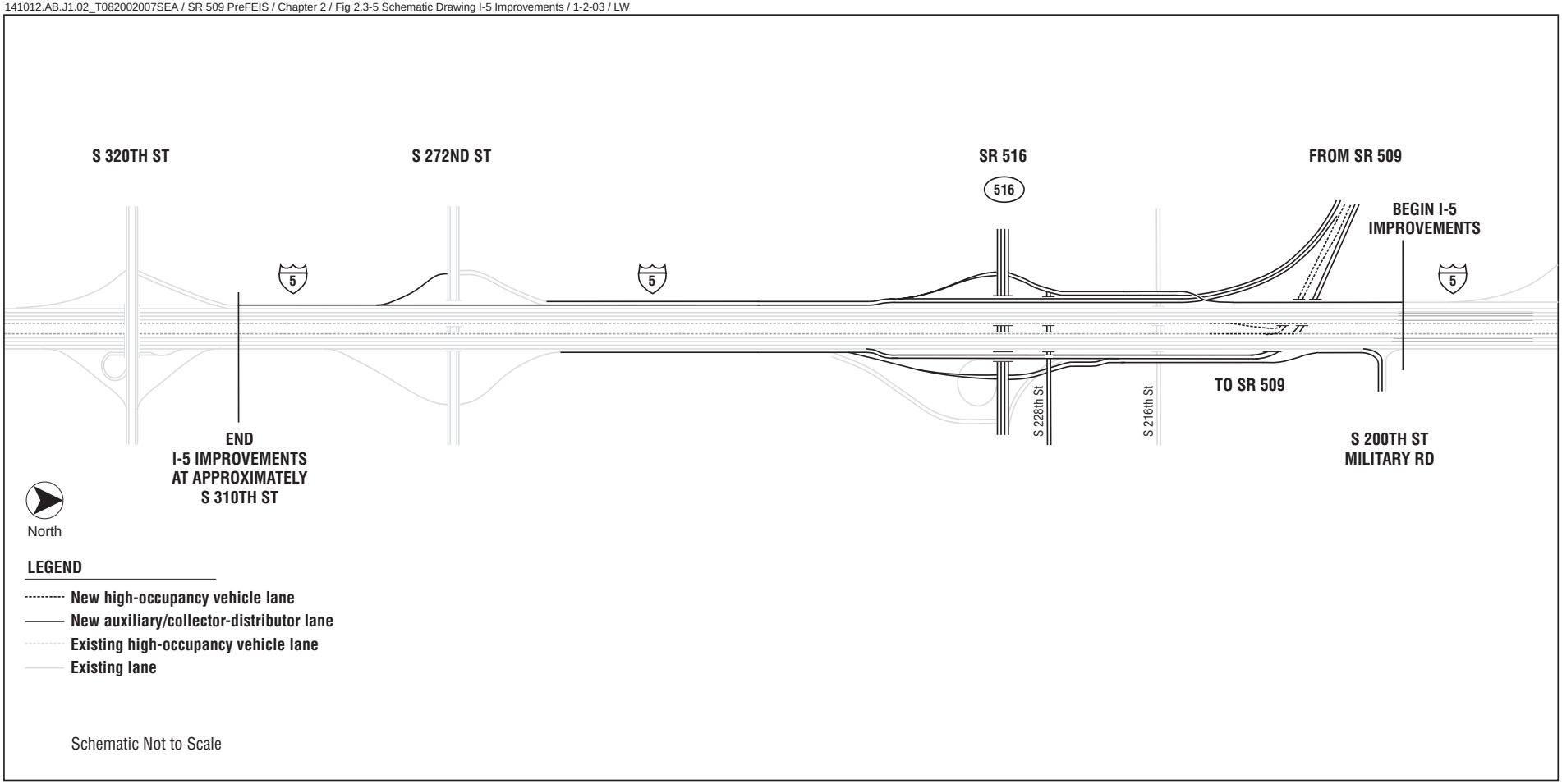
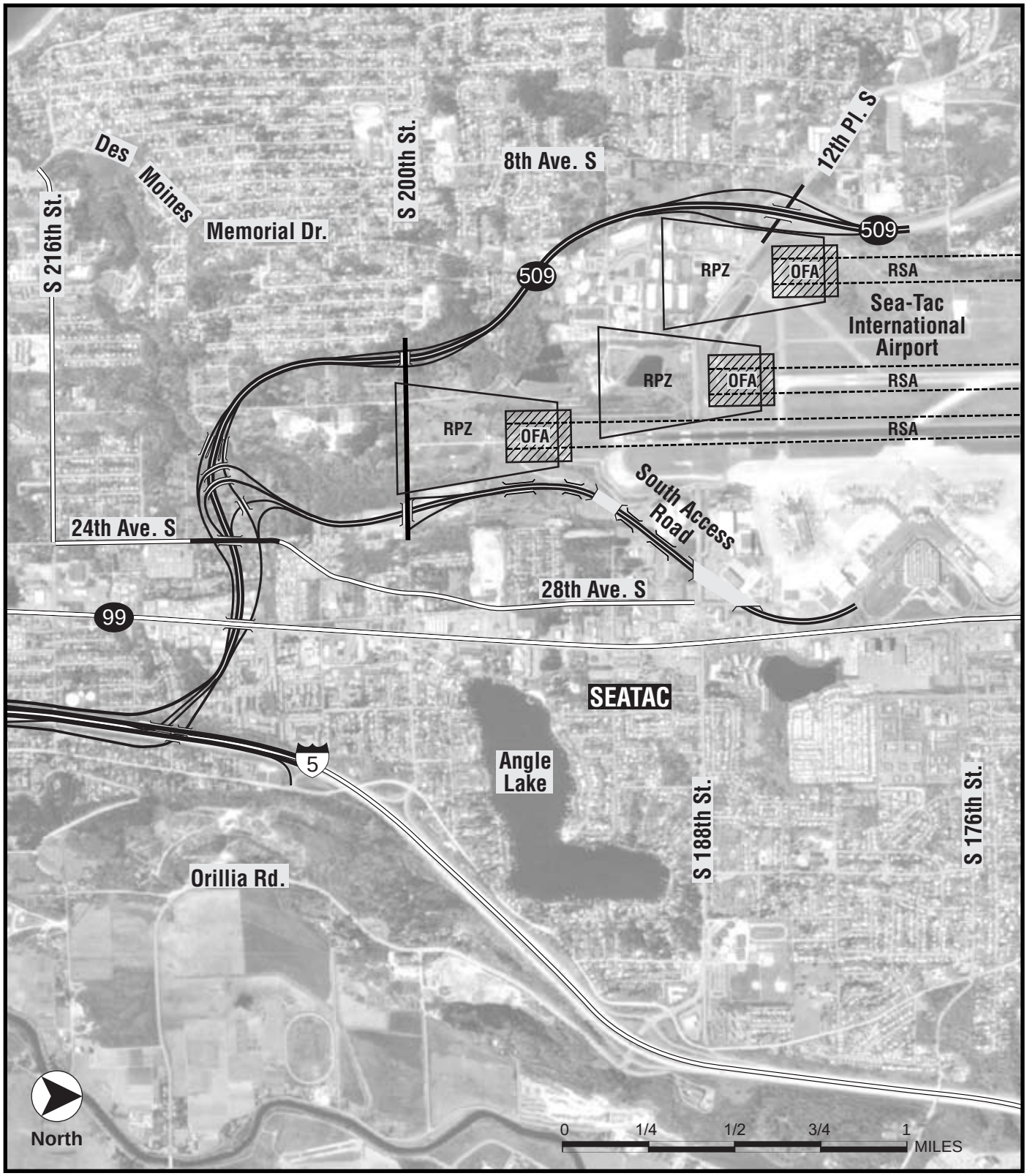


FIGURE 2.3-5

Schematic Drawing of I-5 Improvements

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement



Legend

SR 509/South Access Road Improvements

Bridge

Airport Restricted Areas

RSA Runway Safety Area

OFA Object Free Area

RPZ Runway Protection Zone

FIGURE 2.3-6

Alternative B

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement

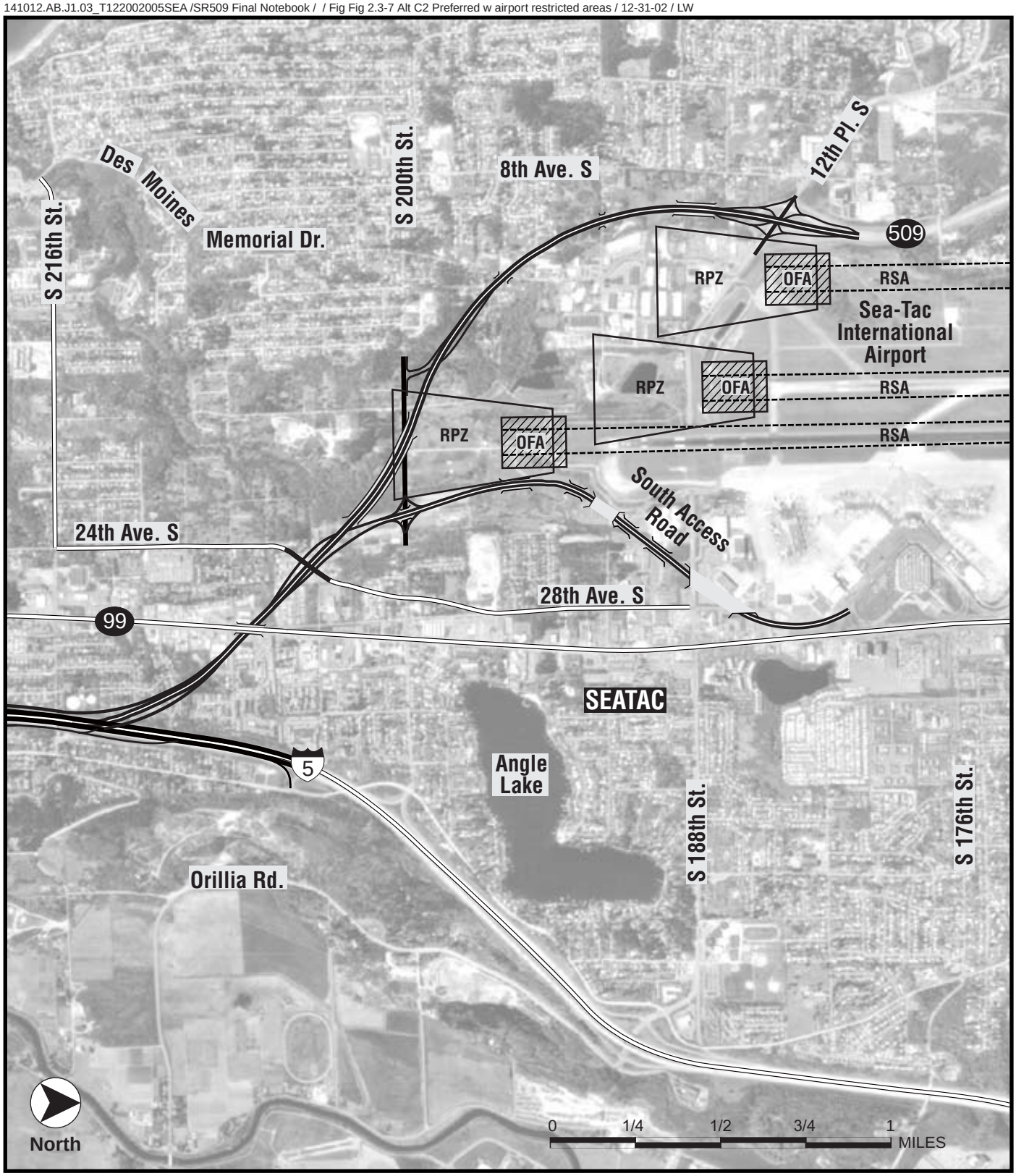
The South Access Road would parallel the eastern edge of the FAA RPZ for Runway 16L/34R and extend along the western edge of the SASA. It would then pass beneath South 200th Street at a tight, partial diamond interchange, which would provide for movements to and from the north on the South Access Road. Continuing southward between Des Moines Creek Park to the west and the Federal Detention Center and existing mobile home parks to the east, the alignment would curve along the park's eastern boundary. Near the proposed intersection of 24th Avenue South and South 208th Street, the South Access Road would join with the proposed SR 509 extension at a partial Y interchange. This partial Y interchange would be interconnected with a full diamond interchange between SR 509 and 28th/24th Avenue South. East of the interchange area, the SR 509 alignment would form a slight arc to the north of the Alaska Airlines Gold Coast Center south of South 208th Street, and then curve southward to join with I-5.

Under Alternative B, the length of the SR 509 freeway extension (including the South Access Road) would be approximately 3.8 miles.

2.3.4 Alternative C2 (Preferred)

Alternative C2 (Figure 2.3-7) would begin at the existing SR 509 terminus at South 188th Street/12th Place South. The alignment would follow the existing WSDOT right-of-way to just south of South 192nd Street. After traveling to the southeast, the alignment would cross through the existing WSDOT right-of-way slightly north of South 200th Street, passing through the southern one-third of the FAA XOFA, which would be far enough south of Runway 16L/34R to preclude the need for a tunnel. (If the alignment crossed through the northern two-thirds of the XOFA, the FAA would require the roadway to cross through the area in a tunnel.) At South 200th Street, the highway would be elevated to cross over the arterial, and would continue to be elevated on structure across the northeast corner of Des Moines Creek Park, thereby minimizing impacts on Des Moines Creek, wetlands, and the park. Between the South 188th Street interchange and the western end of the bridge across the park, most of the freeway would be divided by a 30-foot median. Continuing toward I-5, the SR 509 mainline would pass through existing mobile home parks and continue southeast, passing beneath SR 99 and joining I-5 at approximately South 212th Street.

The South Access Road would parallel the eastern edge of the FAA RPZ and Des Moines Creek Park. It would also be outside the SASA, precluding right-of-way acquisition of SASA property. The South Access Road interchange with SR 509 would be in the location of the existing mobile home parks. Access to and from 28th/24th Avenue South would be provided at this interchange. A second South Access Road interchange would be located at South 200th Street.



Legend

SR 509/South Access Road Improvements

Bridge

Airport Restricted Areas

RSA Runway Safety Area

OFA Object Free Area

RPZ Runway Protection Zone

FIGURE 2.3-7

Alternative C2 (Preferred)

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement

Access between South 200th Street and SR 509 would be provided at two locations. A northbound SR 509 on-ramp and a southbound SR 509 off-ramp would be provided at South 200th Street west of Des Moines Creek Park. Southbound traffic from South 200th Street would access SR 509 via a frontage road to the SR 509 on-ramp at 24th/28th Street. Northbound SR 509 traffic would access South 200th Street via a frontage road from the SR 509 off-ramp at 24th/28th Street.

The length of Alternative C2, including the South Access Road, would be approximately 3.2 miles.

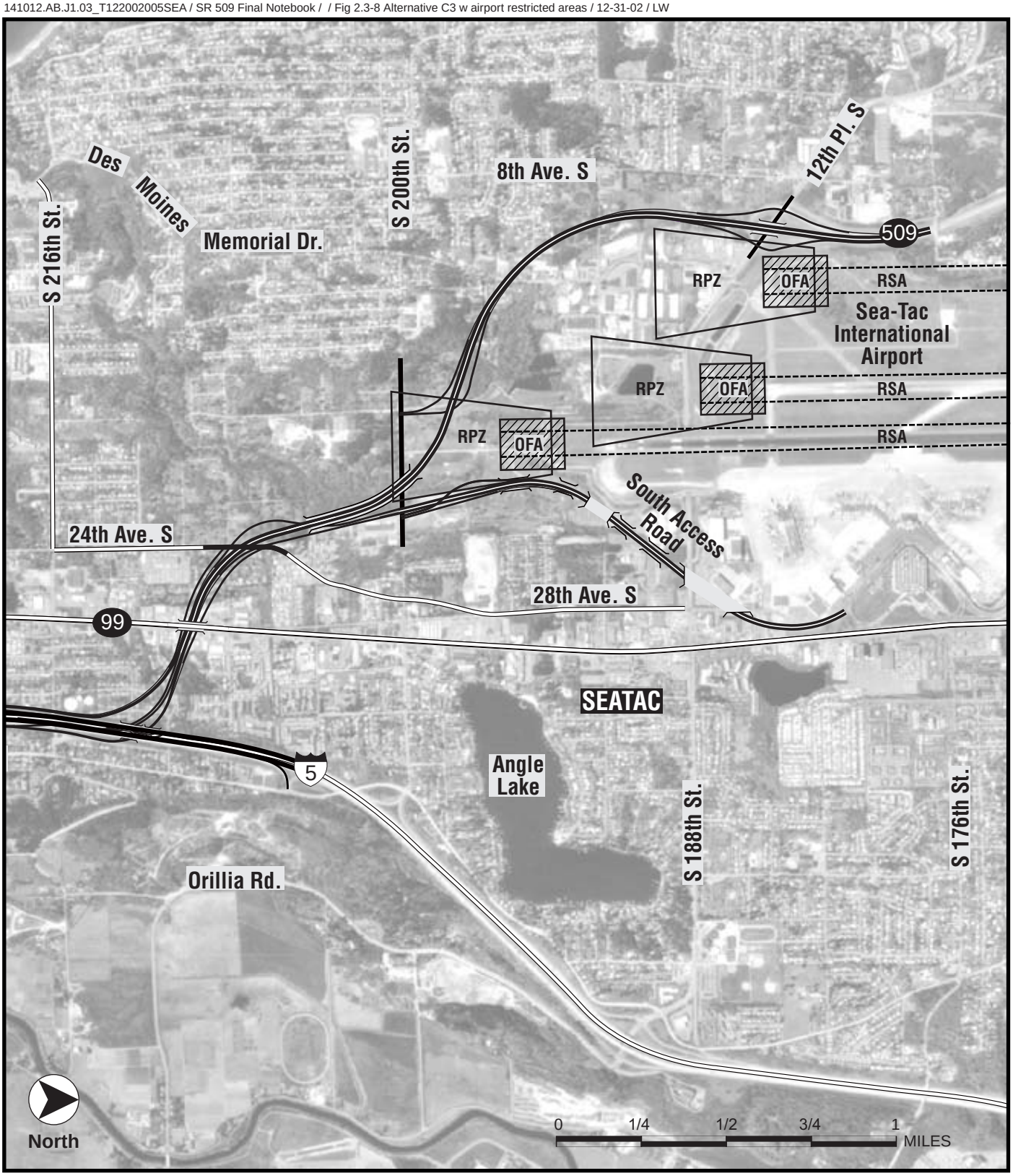
2.3.5 Alternative C3

Under Alternative C3 (Figure 2.3-8), SR 509 would extend southward from its existing terminus at South 188th Street/12th Place South. The alignment would follow the existing WSDOT right-of-way to just south of South 192nd Street. Like Alternative C2, it would traverse the southern one-third of the FAA XOFA, thus precluding the need for a tunnel. Alternative C3 would encroach into the northeast corner of Des Moines Creek Park by crossing through the park on an elevated structure, which would minimize impacts on wetlands and the park. The alignment would continue west and south of existing mobile home parks, and cross through the Alaska Airlines Gold Coast Center south of South 208th Street. The alignment would join I-5 in the vicinity of South 212th Street.

From its northern terminus to South 200th Street, the South Access Road would pass to the east of the FAA RPZ and Des Moines Creek Park. Alternative C3 would intrude on the southeast corner of the SASA. The South Access Road would run parallel to the east side the SR 509 mainline until the vicinity of South 204th Street, where the southbound on-ramp would cross the mainline to the west, eventually joining the mainline in the vicinity of 28th/24th Avenue South.

Northbound and southbound access from South 200th Street to SR 509 would be divided and provided at two locations. A northbound SR 509 on-ramp and a southbound SR 509 off-ramp would be provided at South 200th Street along the west side of Des Moines Creek Park. A southbound on-ramp and northbound off-ramp would be provided at South 200th Street on the east side of Des Moines Creek Park.

Under Alternative C3, the length of the SR 509 freeway extension (including the South Access Road) would be approximately 3.5 miles.



Legend

SR 509/South Access Road Improvements

Bridge

Airport Restricted Areas

RSA Runway Safety Area

OFA Object Free Area

RPZ Runway Protection Zone

FIGURE 2.3-8

Alternative C3

SR 509: Corridor Completion/I-5/South Access Road Environmental Impact Statement

2.3.6 Preferred Alternative

Alternative C2 has been identified as the preferred alternative by the Steering Committee, the Executive Committee, and the Merger Agreement Signatory Agency Committee (SAC) (see documentation of Concurrence Point #3 of the NEPA/SEPA/404 Merger Agreement in Appendix A), and based on public input received during review of the January 2002 Revised DEIS. The selection of Alternative C2 as the preferred alternative is based on the following factors:

- While Alternative B would require the least amount of park land, it would introduce vehicular traffic noise to the most isolated and pristine area of the park and could have a substantial adverse impact on the natural setting and the use and enjoyment of the Des Moines Creek Trail. In addition, the removal of numerous trees to accommodate the proposed bridge structures, the resulting artificial shading on the trail below the bridges, and the dominance of the bridges in the trail users' view would substantially impair the visual continuity of the natural stream valley. The cities of SeaTac and Des Moines parks directors have expressed concern about the character-changing effects of the proposed Alternative B crossing. This area is seen as having one of the highest values for recreational use in the park (compared to the area that would be impacted by Alternatives C2 and C3, which, except for the trailhead, is not currently used for recreation nor planned for future recreational development).

- Alternative C2 would have less wetland impact than Alternatives B and C3.

- Alternatives B and C3 have more lane miles than Alternative C2, which would create more new impervious surface area.

- Alternative B would impact the largest number of sensitive noise receptors (primarily residential units).

- Both Alternatives B and C3 would cause more single-family residential unit displacements than Alternative C2; on the other hand, Alternative C2 would have more multifamily unit displacements than the other alternatives; however, it would be possible to relocate residents within the area.

- Alternative A, the No Action Alternative, would not meet the project purpose and need.

- Alternative C3 would cross through the Alaska Airlines Gold Coast Center, possibly forcing the relocation of this facility to another city because of the lack of comparable alternative sites near the airport. The City of SeaTac indicated that it could not support an alternative that would have that great of a negative effect on the economic base of the community.

This is not to imply that Alternative C2 is without adverse impacts, including residential and business displacements, roadway right-of-way acquisition in Des Moines Creek Park, increased impervious surfaces in five drainage basins, increased noise at sensitive receptors, and loss of wildlife habitat. However, as discussed in detail throughout this document, mitigation has been proposed as part of the preferred alternative to adequately mitigate for all identified adverse impacts. These measures, in combination with the reasons listed above, have led to the conclusion that Alternative C2 is the preferred alternative.

2.4 Traffic Analysis of Alternatives Analyzed in the FEIS

The traffic analysis for the SR 509: Corridor Completion/I-5/South Access Road Project examines extending SR 509 south to I-5; increasing regional capacity and relieving congestion on I-5 from its connection with the SR 509 extension to South 310th Street; and providing a new high-capacity, limited access connection to Sea-Tac Airport, known as the South Access Road. As mentioned previously, there are three design options—H0, H2-A, and H2-B—for the last 1,000 feet of the South Access Road, known as the South Airport Link. With respect to transportation system characteristics, Design Options H0 and H2-A are very similar, and have therefore been combined for the purpose of presenting the results of the traffic analysis. The area evaluated in the traffic analysis extends north to South 144th Street, west to Puget Sound, south to South 310th Street, and east to SR 167. This area includes all or part of the Cities of SeaTac, Normandy Park, Des Moines, Tukwila, Renton, Kent, Auburn, Federal Way and Burien, and portions of unincorporated King County.

2.4.1 Traffic Model

The traffic analysis for the build alternatives relies on a travel demand model for forecasting future traffic volumes. The model used in forecasting for the proposed project is based on information from the comprehensive plans for the Cities of SeaTac and Des Moines and numerous transportation plans and studies, as cited in the *SR 509/South Access Road EIS Discipline Report: Transportation* (CH2M HILL January 2002a). The forecast year used for this study is 2020. The traffic analysis looked at two areas: the traffic analysis area (roughly from north of SR 518 to south of South 310th Street and Puget Sound to east of SR 167) and the primary traffic study area (roughly from South 170th Street to south of South 272nd Street). The traffic analysis area

captures project effects on the larger, regional network and the primary traffic study area addresses project effects on the local network.

The land use data for the traffic analysis area are based on regional forecasts by the Puget Sound Regional Council (PSRC), which have been modified to reflect local land use plans and information from meetings with local staff. Two land use scenarios were developed for 2020—one for the No Action Alternative and one for the build alternatives. This approach reflects the potential development that may not occur without improvements to SR 509, and complies with transportation service standards and Growth Management Act (GMA) regulations, which indicate that transportation and other public improvements needed to accommodate new development should occur concurrent with that development. Local jurisdictions do not currently have growth restrictions that require the proposed action to be built before growth in the area can proceed. The land use scenarios for the No Action Alternative and the build alternatives include the third runway at Sea-Tac Airport.

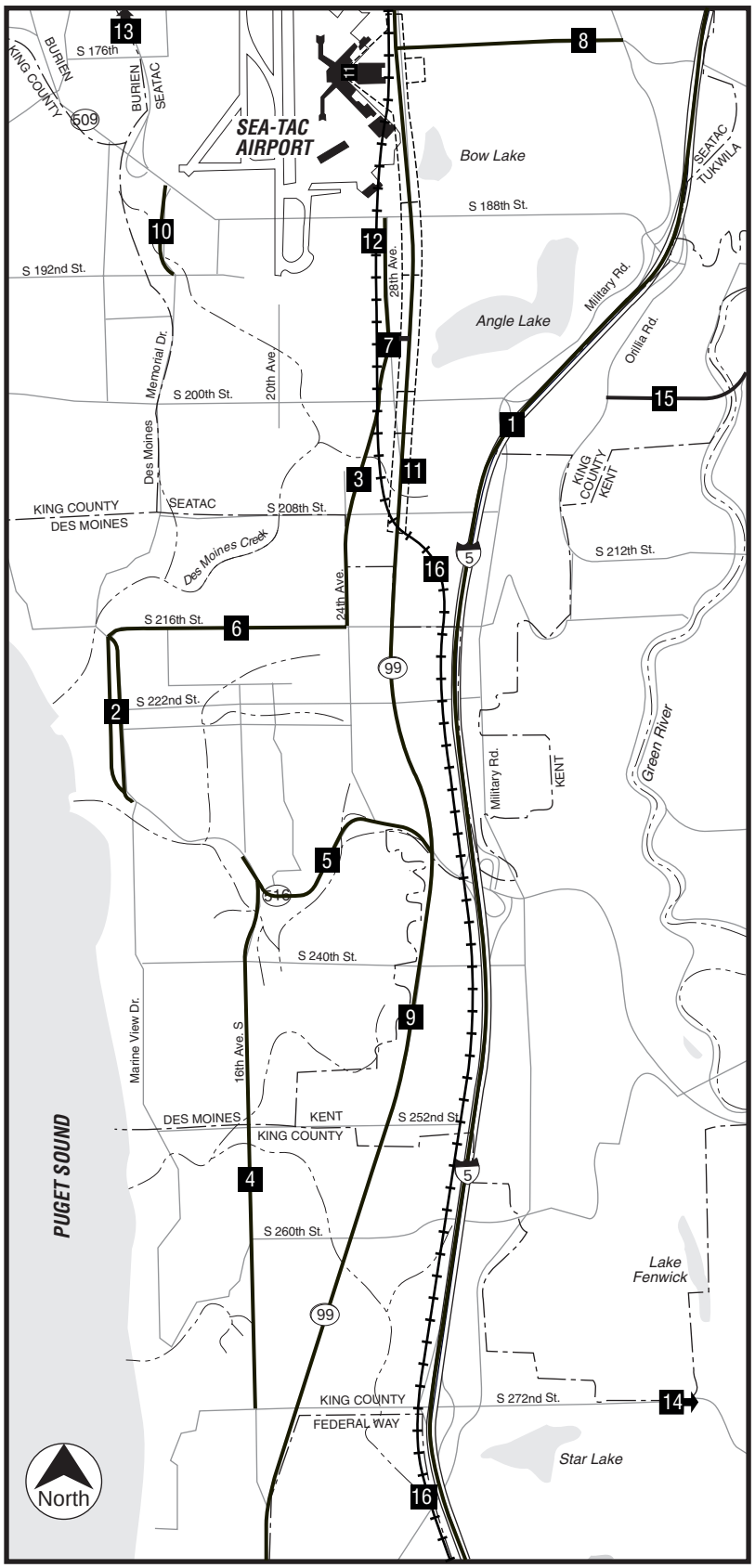
A base transportation network for the 2020 No Action Alternative was developed from the transportation plans for the transportation analysis area. The base year network includes a number of major transportation improvements. In addition to street/roadway improvements, the base year network includes construction of the first phase of the Sound Transit Link Light Rail system and commuter rail in the Green River valley. The transportation improvements included in the 2020 baseline transportation network are shown in Figure 2.4-1. Along with improved transit service, a variety of transportation system management (TSM) strategies are assumed to be implemented by employers in the traffic analysis area, including telecommuting, a compressed work week, parking pricing, and employer programs. These programs could reduce work trips by as much as 20 percent.

Without currently planned regional and local transit improvements, travel demand would increase, resulting in more congestion and lower travel speeds (particularly under the No Action Alternative). There would be a further shift of travel demand into other hours of the day, and impeded access and mobility throughout the day. If this were to occur, the traffic analysis area would need additional vehicle capacity. The analysis of the alternatives assumes that the proposed regional transit improvements would be built.

2.4.2 Vehicle Circulation

Street System

Improvements to the transportation system under the No Action Alternative would include the transit projects mentioned above and the planned capacity improvements to the system, as shown in Figure 2.4-1.



1 I-5 HOV Lanes
2 Marine View Drive/7th Ave S. Project (Completed)
3 28th/24th Avenue S. Arterial (Phase 1 completed – S. 188th to S. 204th Streets)
4 16th Avenue S.
5 Kent-Des Moines (SR 516) Road
6 S. 216th Street
7 S. 195th Street
8 S. 176th Street (Completed)
9 Pacific Highway S./International Boulevard (SR 99) (Phases 1 and 2 completed – S. 170th to S. 200th Streets)
10 Des Moines Memorial Drive (Completed)
11 Sea-Tac People Mover (Indefinitely on hold)
12 Sound Transit Project Link Light Rail Transit Route, Phase 1
13 1st Avenue S. Bridge (Completed)
14 S. 272nd/S. 277th Street Corridor
15 Cross-Valley Connector Along S. 192nd/196th/200th Street Corridor (Completed)
16 Sound Transit future phase

FIGURE 2.4-1

Baseline Transportation Network Year 2020 Improvements

SR 509: Corridor Completion/
I-5/South Access Road
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141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / 2020 Improvements / 1-2-03 / LW

The build alternatives would also include the baseline improvements proposed under the No Action Alternative. Because the build alternatives would cut across several existing streets, grade separations would be provided for all streets with an arterial classification (principal, minor, or collector), as defined by the 1991 King County Functional Classification. Most other streets would be provided with a cul-de-sac or other suitable closure.

Each build alternative would provide improved access to Sea-Tac Airport and the SR 509 corridor for residents of the Green River valley (via SR 516), Federal Way, southern King County, and Pierce County.

Traffic Volumes

For the build alternatives, traffic volumes at the screenlines (imaginary lines that cross a number of key roadways to measure directional travel in broad corridors) would increase between approximately 1 percent to 23 percent compared to the No Action Alternative. The largest increases would occur at Screenline F (I-5) and Screenline C (South 188th Street), as shown in Table 2.4-1.

A summary of the existing and forecast traffic volumes at the screenlines is provided in Table 2.4-1. As expected, differences in the screenline traffic volumes among South Airport Link Design Options H0/H2-A and H2-B lessen the farther the screenline is from the South Access Road. Noticeable differences for the design options are noted in the vicinity of the airport—Screenline C (South 188th Street) and Screenline D (South 160th Street).

Table 2.4-1
Screenline Comparison of Traffic Volumes
2020 (p.m. peak hour)

Screenline	Existing (1998)	Alt. A (No Action)	Design Options H0/H2-A[a]			Design Option H2-B (Preferred)[a]		
			Alt. B	Alt. C2 (Preferred)	Alt. C3	Alt. B	Alt. C2 (Preferred)	Alt. C3
A (S. 272nd St.)	17,950	23,300	24,020	24,100	24,160	24,020	24,100	24,160
B (SR 516)	21,200	26,470	29,030	29,090	29,180	29,030	29,110	29,170
C (S. 188th St.)	24,550	30,810	35,760	35,780	35,590	34,850	34,900	34,750
D (S. 160th St.)	28,250	33,550	36,650	36,590	36,610	36,590	36,480	36,480
E (S. 144th St.)	30,500	34,910	35,180	35,240	35,310	35,180	35,240	35,310
F (I-5)	25,100	30,340	37,180	37,570	37,350	37,300	37,540	37,350

[a]Design Options H0/H2-A include South Access Road ramps to and from the north at South 200th Street. In Design Option H2-B, ramps are located at South 188th Street.

Source: The Transpo Group and CH2M HILL.

In the SR 509 corridor, traffic volumes would increase substantially under the build alternatives because of the diversion of traffic from I-5 to the SR 509 freeway extension. In the existing SR 509 freeway sections, the total volumes in both directions would range from approximately 6,550 to 6,850 vph north of SR 518 and approximately 7,750 to 8,150 vph south of SR 518, depending on the alternative. In the proposed sections of SR 509, maximum total volumes in both directions would range from approximately 7,400 (Alternative C3) to 7,800 vph (Alternative C2). These traffic volumes do not substantially differ among the alternatives.

Traffic volumes on the South Access Road would differ depending on the South Airport Link design. Traffic volumes under Design Options H0/H2-A for any of the build alternatives would be higher than Design Option H2-B, ranging from approximately 2,130 to 2,700 vph. With Design Option H2-B, traffic volumes on the South Access Road would be approximately 1,780 vph under Alternative B, 1,930 vph under Alternative C2, and 1,965 vph for Alternative C3. Traffic volumes on the South Airport Link would be lowest with Design Option H2-B because of the direct connection to the airport roadway network north of South 188th Street.

Under all the build alternatives, the SR 509 freeway extension and new South Access Road would divert traffic from other north-south facilities, as shown by the lower traffic volumes on other corridors in the project area (roughly South 170th Street to south of South 272nd Street and east of SR 509, and Puget Sound to west of SR 181). At Screenline C (South 188th Street), volumes would decrease on I-5, SR 99, and First Avenue South.

One of the major benefits of the build alternatives, compared to the No Action Alternative, would be improved access and mobility in the middle of the day and at other off-peak hours.

Vehicle miles of travel (vmt) and vehicle hours of travel (vht) are measures of travel and congestion based on number of trips. Alternative A would have the lowest vmt of any of the alternatives because there would potentially be less development in the primary traffic study area and, therefore, less travel demand. Despite the increased vmt and vht for the build alternatives, average speed would remain generally the same as for the No Action Alternative. As shown in Table 2.4-2, Alternative B would have the highest vehicle hours and miles traveled, and the lowest speed (15.3 mph). Alternative C2 would have the lowest vht and the highest speed of the build alternatives.

Level of Service

LOS is a qualitative description of the degree of comfort drivers experience as they travel along a corridor. LOS grades range from LOS A, in which little or no delay is experienced, to LOS F, which denotes extreme congestion. TRB Special Report 209, *1997 Highway Capacity Manual*, defines each LOS

Table 2.4-2
Comparison of Vehicle Miles of Travel and Vehicle Hours of Travel in the Project Area
2020 (p.m. peak hour)

	Design Options H0/H2-A[a]			Design Option H2-B (Preferred)[a]		
	VMT	**VHT**	**Speed (mph)**	**VMT**	**VHT**	**Speed[c] (mph)**
Alternative A (No Action)[b]	307,700	19,840	15.5	N/A	N/A	N/A
Alternative B	341,230	22,370	15.3	340,440	22,030	15.5
Alternative C2 (Preliminary Preferred)	339,060	21,540	15.7	338,705	21,475	15.8
Alternative C3	338,190	21,910	15.4	337,770	21,810	15.5

N/A = not applicable

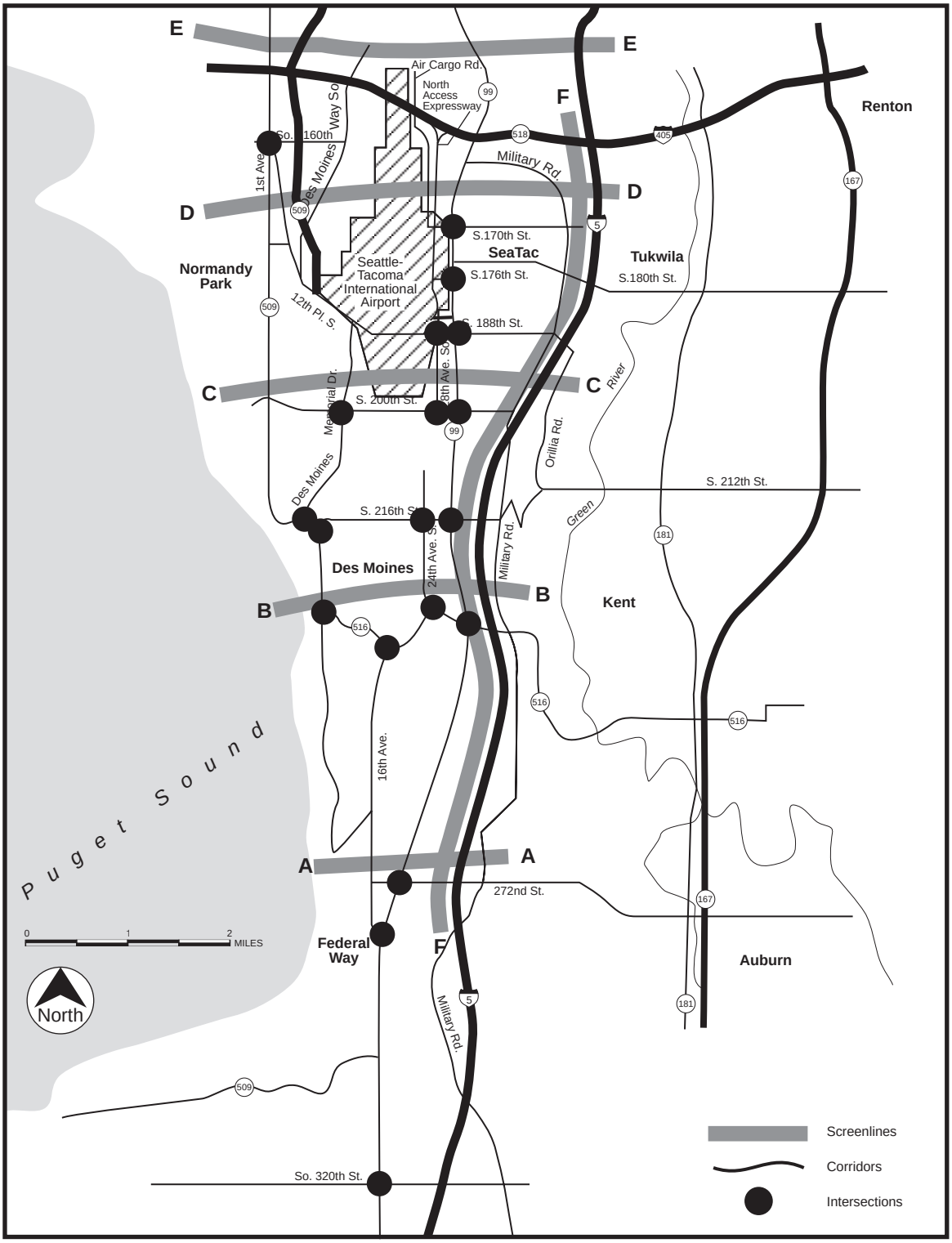
[a] *Design Options H0/H2-A include South Access Road ramps to and from the north at South 200th Street. In Design Option H2-B, ramps are located at South 188th Street.*

[b] *The No Action Alternative does not reflect either Design Options H0/H2-A or H2-B,* but is considered the baseline.

[C] *Speed is calculated by dividing the total vmt by total vht in the project area.*

grade (see *SR 509/South Access Road EIS Discipline Report: Transportation* [CH2M HILL January 2002a]).

A three-tiered system of analysis was used to determine the LOS. In the first tier, an analysis of screenlines (imaginary lines that cross a number of key roadways to measure directional travel in broad corridors) provided a regional perspective for the transportation analysis area. The screenline analysis provides a broad look at the system. The second tier was an analysis of each major corridor in the same area. This analysis provides a more detailed examination of changes in demand and operations. The third tier was an LOS analysis for 19 key intersections, which identified specific traffic bottlenecks. These roadway segments and intersections were selected for analysis because of their importance and because they would best reflect changes in travel demand and traffic operations due to implementation of the build alternatives. LOS was determined by comparing critical volumes to estimated capacity. Figure 2.4-2 provides a map of the locations of screenlines, corridors, and intersections used for this analysis. Figures 2.4-3 through 2.4-9 show the LOS for the No Action and the build alternatives under Design Options H0/H2-A and H2-B.

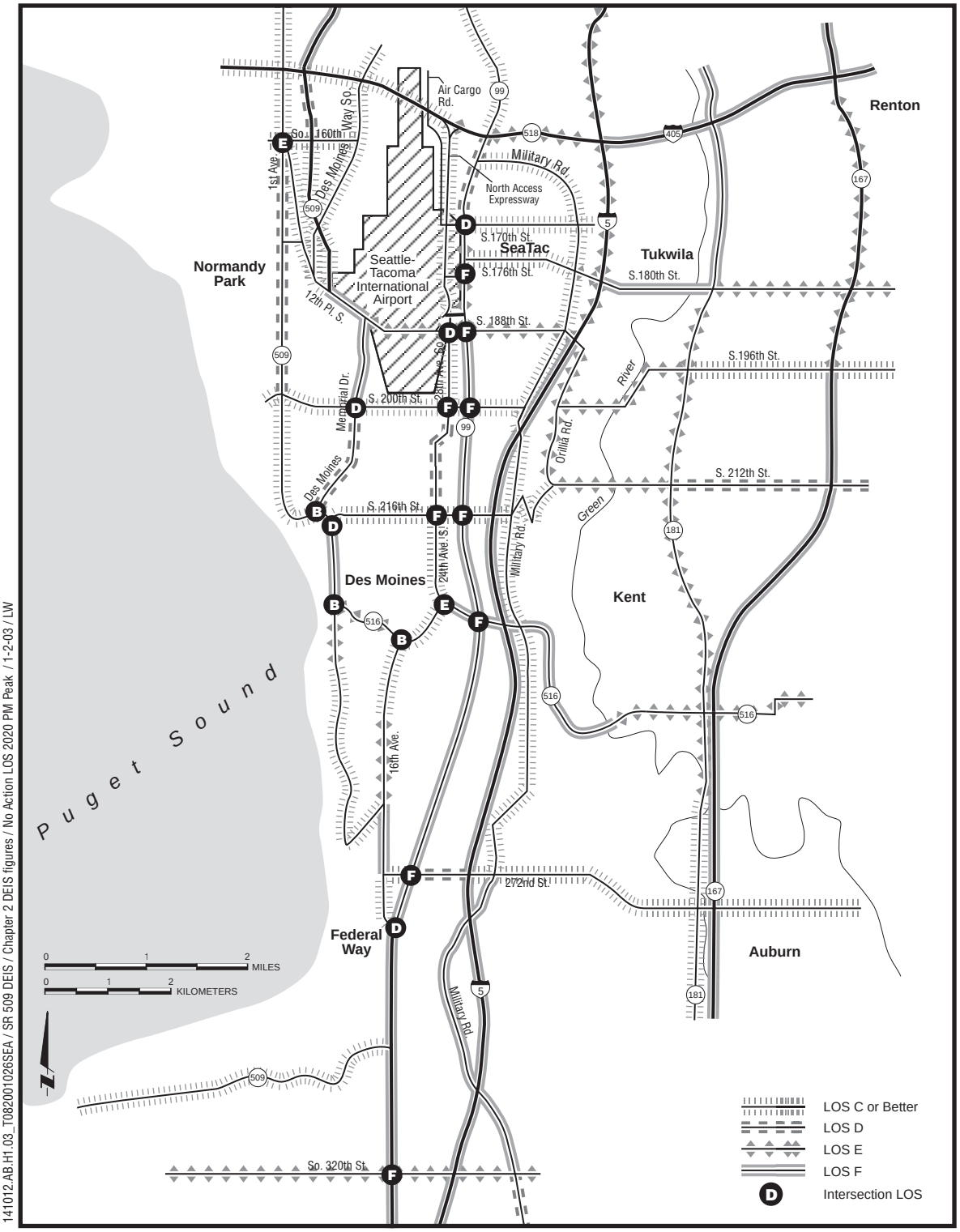


141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / Screenlines / 1-2-03 / LW

FIGURE 2.4-2

Screenlines and Intersections in Primary Traffic Study Area

SR 509: Corridor Completion/I-5/South Access Road Environmental Impact Statement



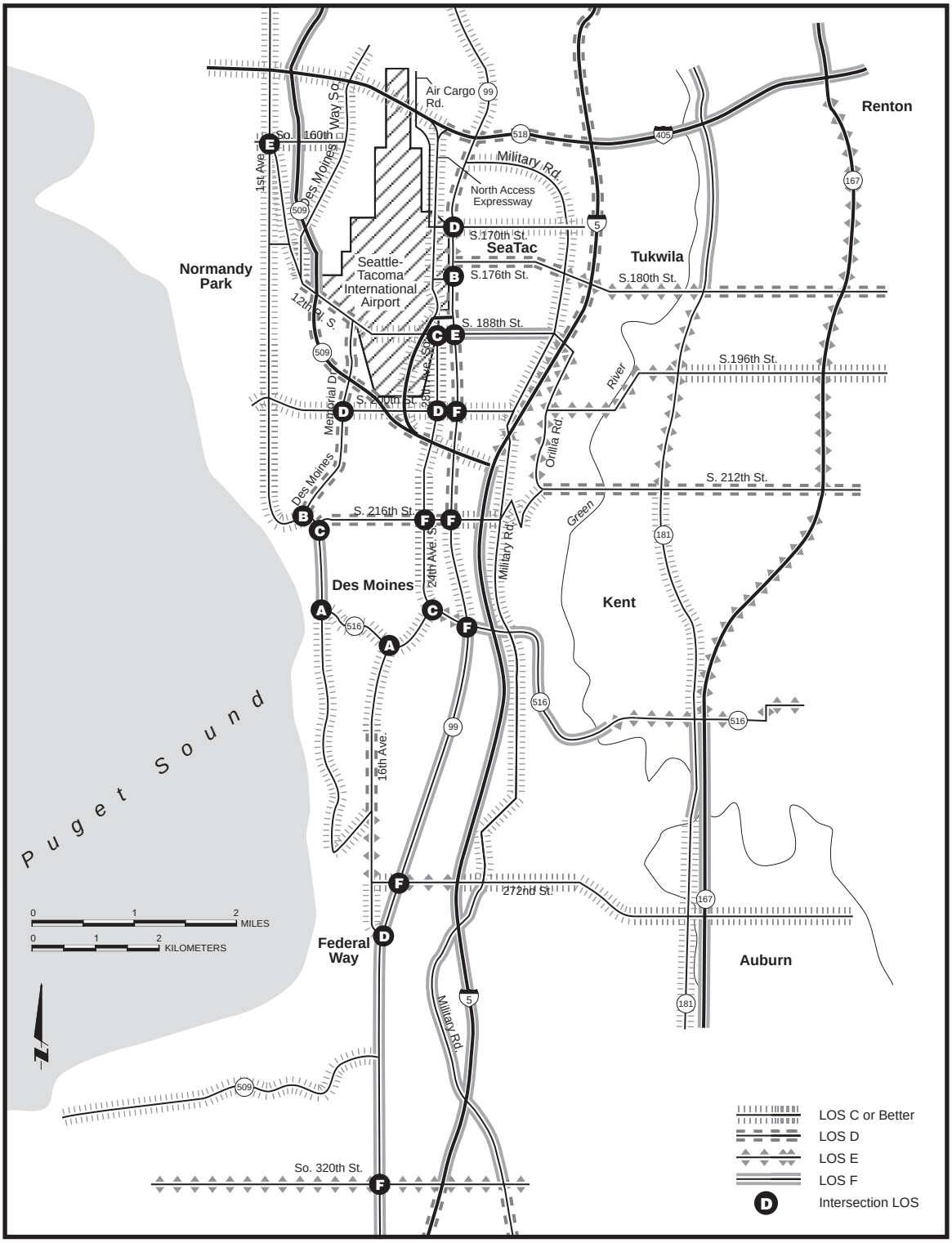
141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / No Action LOS 2020 PM Peak / 1-2-03 / LW

Note: Roadway level of service displayed is for travel direction with highest volume.

FIGURE 2.4-3

No Action Level of Service 2020 PM Peak Hour

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement



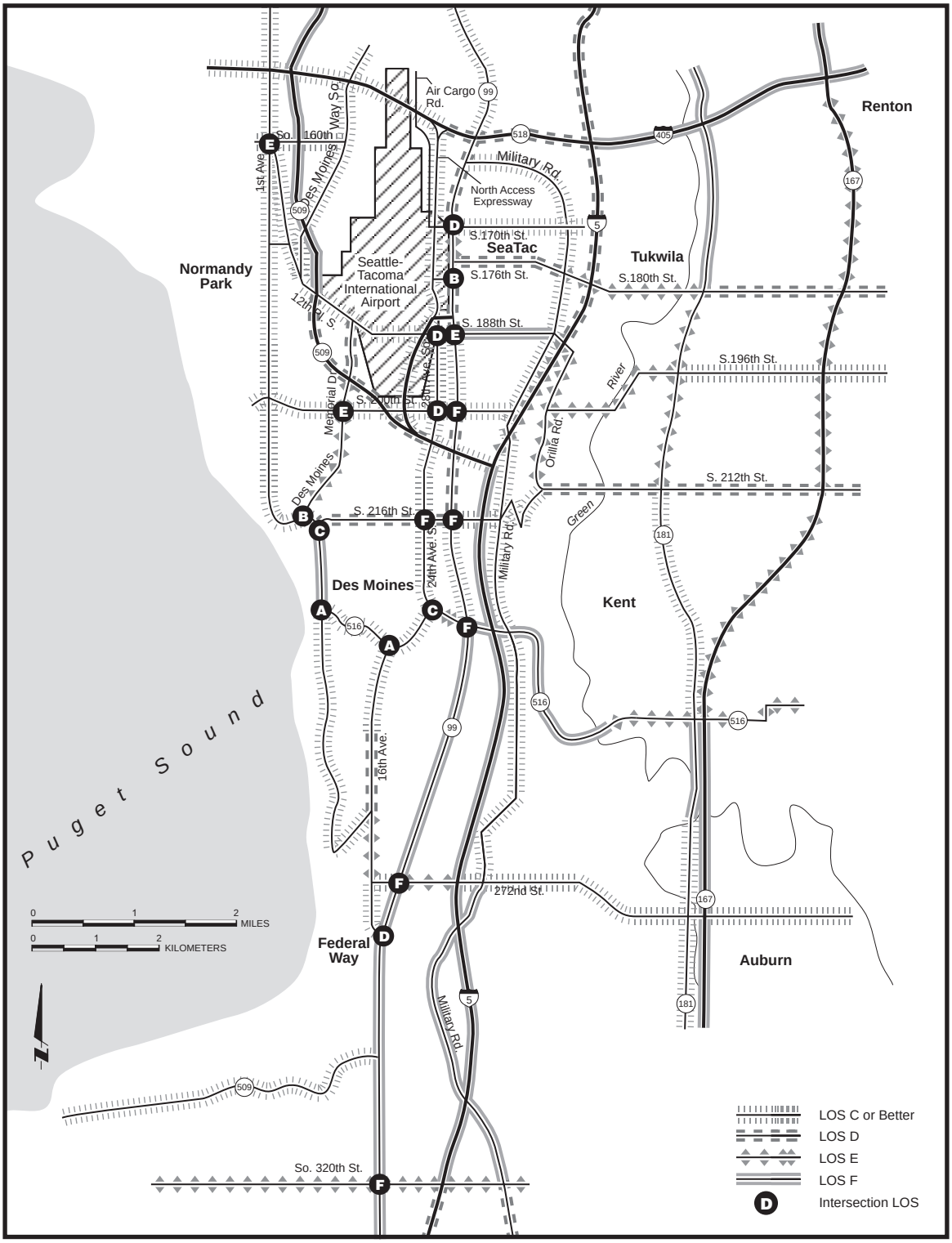
141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / AltBHO_H2A_2020 LOS 2.4-4 / 1-2-03 / LW

Note: Roadway level of service displayed is for travel direction with highest volume.

FIGURE 2.4-4

Alternative B – HO/H2-A Level of Service 2020 PM Peak Hour

SR 509: Corridor Completion/I-5/South Access Road Environmental Impact Statement



141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / AltBH2B_2020 LOS 2.4-5 / 1-2-03 / LW

Note: Roadway level of service displayed is for travel direction with highest volume.

FIGURE 2.4-5

Alternative B – H2-B Level of Service 2020 PM Peak Hour

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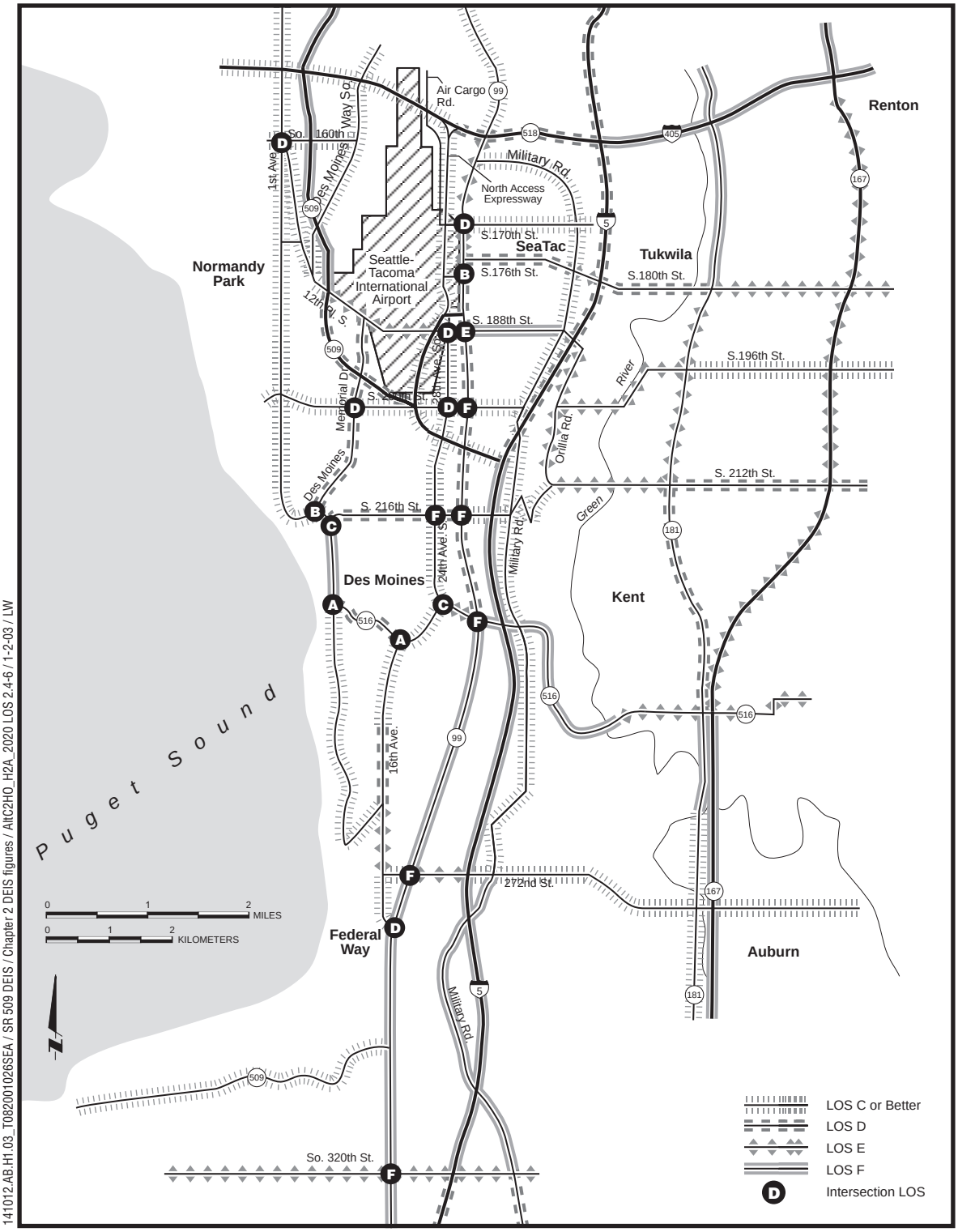


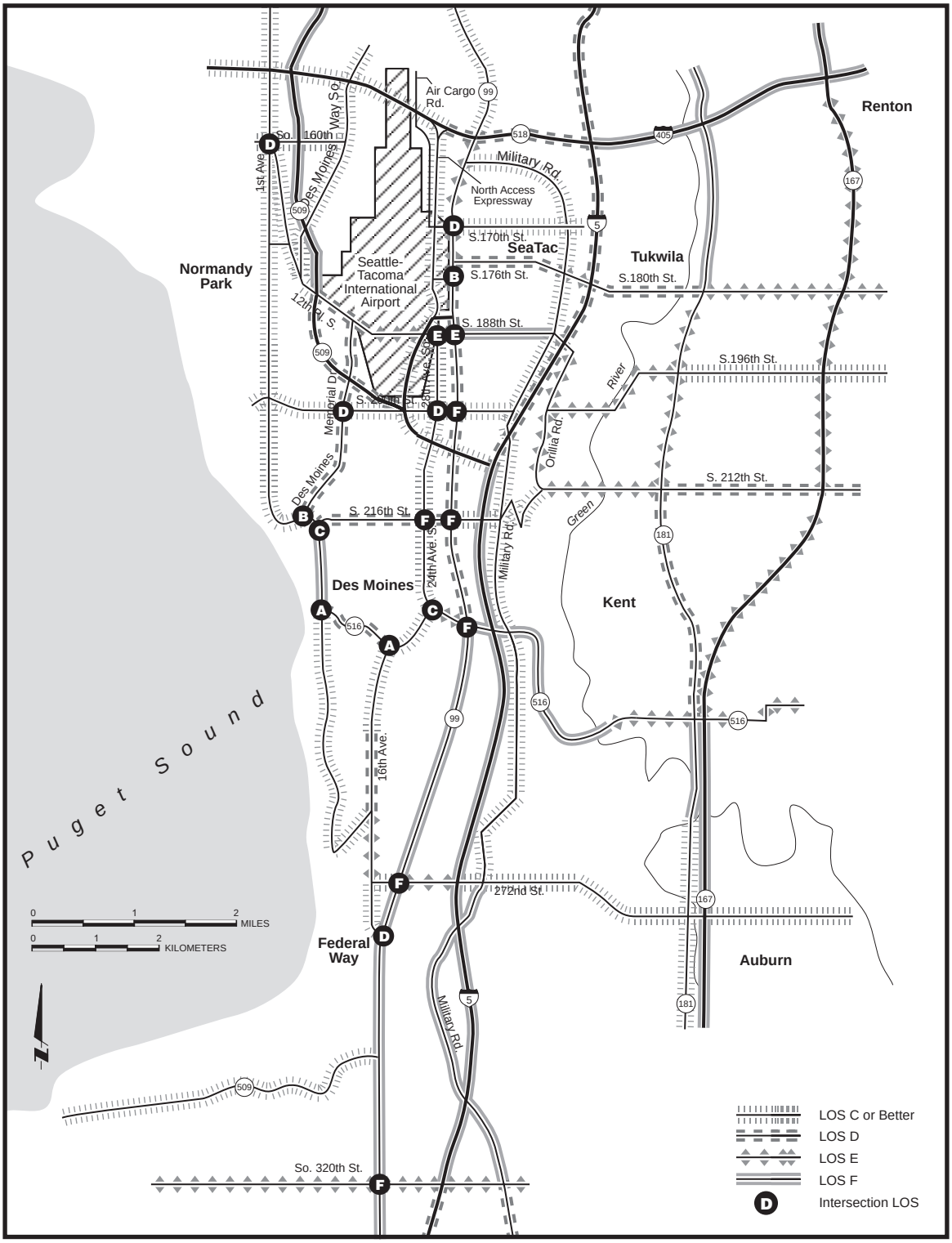
141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / AltC2HO_H2A_2020 LOS 2.4-6 / 1-2-03 / LW

Note: Roadway level of service displayed is for travel direction with highest volume.

FIGURE 2.4-6

Alternative C2 – HO/H2-A Level of Service 2020 PM Peak Hour

SR 509: Corridor Completion/I-5/South Access Road Environmental Impact Statement



141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / AltC2H2B_2020 LOS 2.4-7 / 1-2-03 / LW

Note: Roadway level of service displayed is for travel direction with highest volume.

FIGURE 2.4-7

Alternative C2 – H2-B Level of Service 2020 PM Peak Hour

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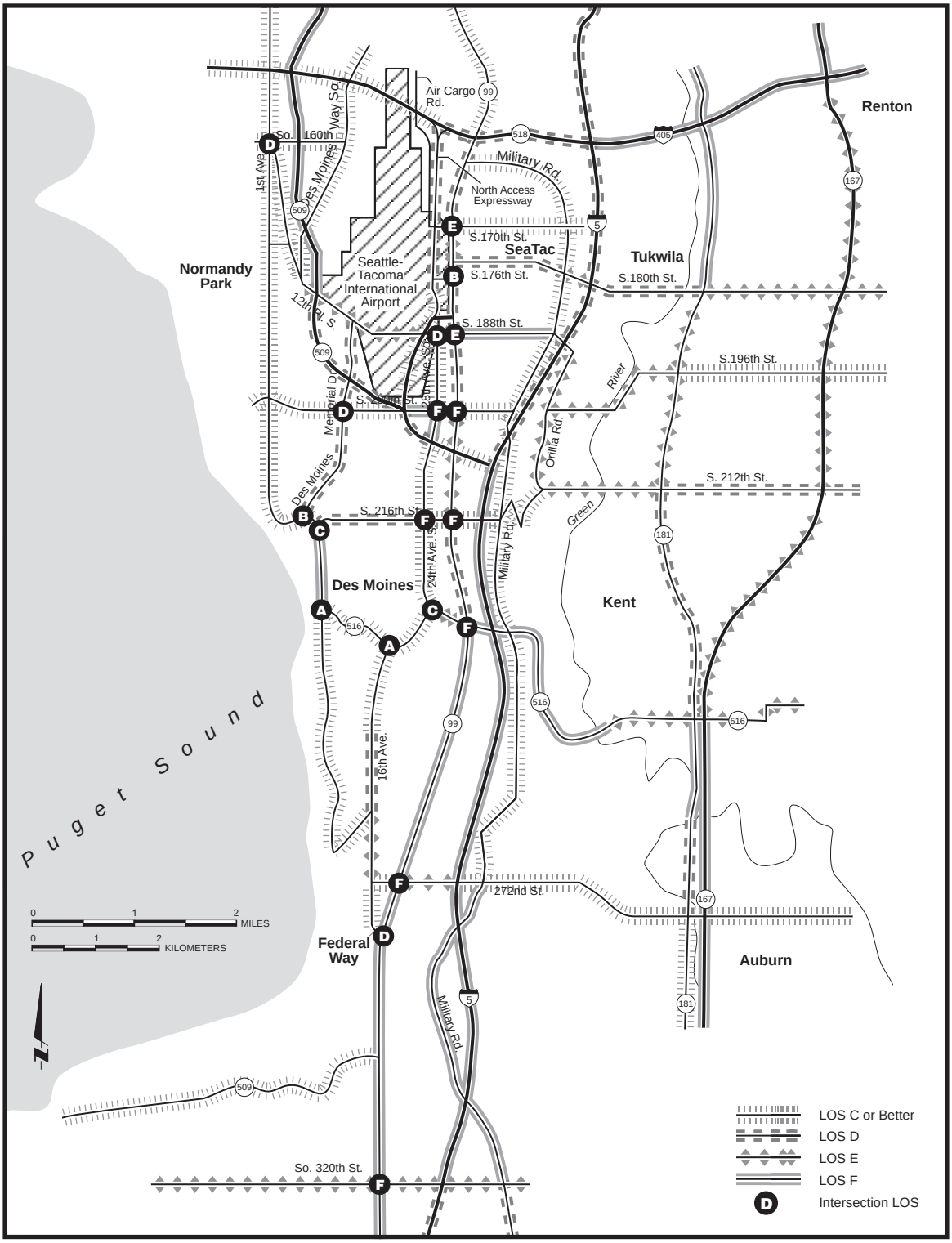
Environmental Impact Statement



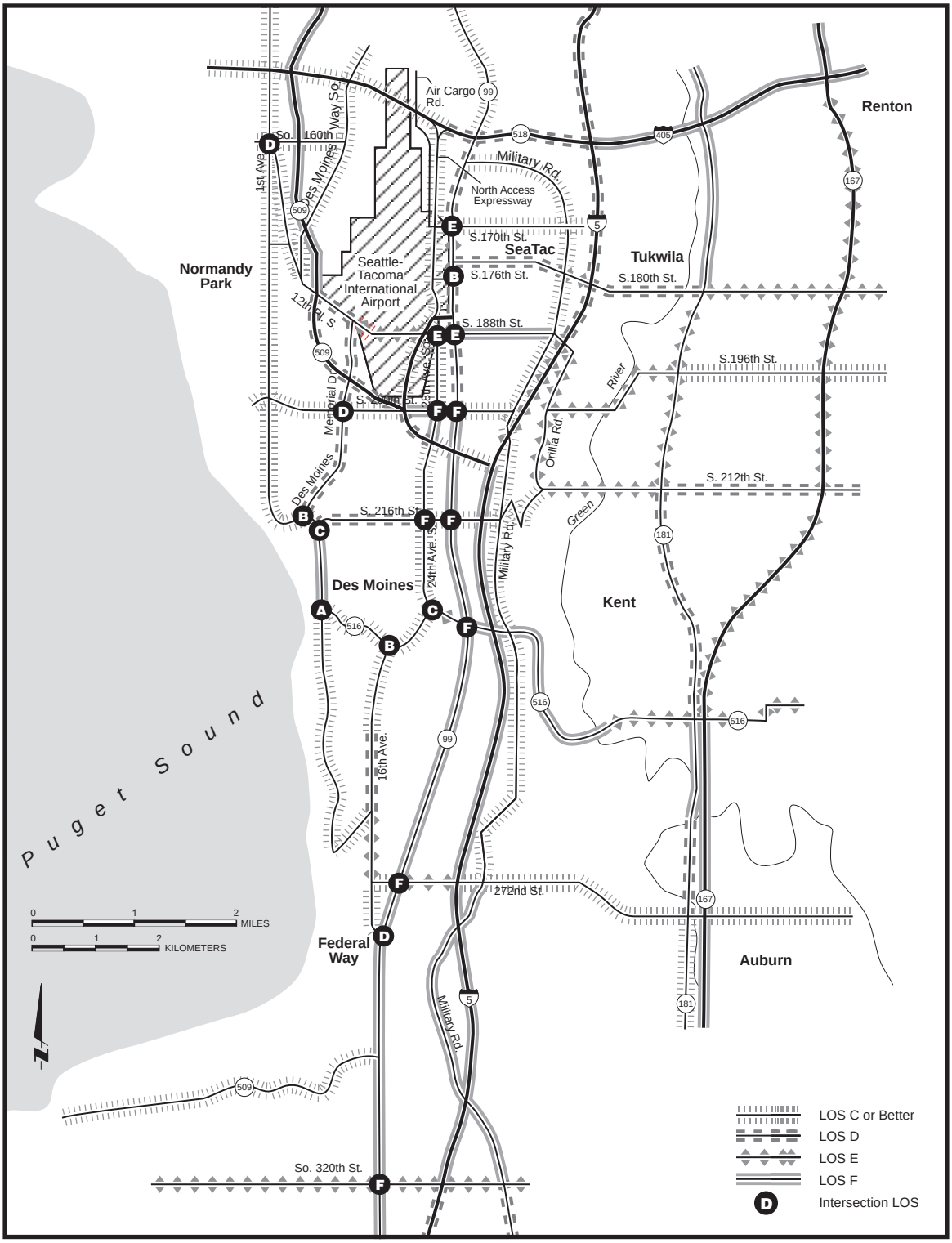
141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / AltC3HO_H2A_2020 LOS 2.4-8 / 1-2-03 / LW

Note: Roadway level of service displayed is for travel direction with highest volume.

FIGURE 2.4-8

Alternative C3 – HO/H2-A Level of Service 2020 PM Peak Hour

SR 509: Corridor Completion/I-5/South Access Road Environmental Impact Statement



141012.AB.H1.03_T082001026SEA / SR 509 DEIS / Chapter 2 DEIS figures / AltC3_H2B_2020 LOS 2.4-9 / 1-2-03 / LW

Note: Roadway level of service displayed is for travel direction with highest volume.

FIGURE 2.4-9

Alternative C-3 – H2B Level of Service 2020 PM Peak Hour

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement

Screenlines

Under the build alternatives, increased capacity in the project area would provide general overall improvements in traffic operations, despite the overall increase in travel demand (Table 2.4-3). Screenline LOS would be essentially the same for all build alternatives. Screenline A (South 272nd Street) and possibly Screenline F (I-5) would operate at LOS F. The anticipated changes in LOS would be a substantial improvement over the No Action Alternative, and only slightly worse than existing conditions for a few screenlines. Portions of SR 509, SR 99, South 188th Street, and Marine View Drive would operate at LOS E or F. In general, the overall system would operate at LOS D/E.

Table 2.4-3
2020 Alternative Screenline Level of Service Summary

	Alternative A	Alternative B		Alternative C2		Alternative C3	
Screenline	(No Action)	H0/H2-A	H2-B	H0/H2-A	H2-B	H0/H2-A	H2-B
A (S. 272nd)	F	E/F	E/F	E/F	E/F	E/F	E/F
B (SR 516)	F	E	E	E	E	E	E
C (S. 188th)	F	D	D	D	D	D	D
D (S.160th)	D/E	E	E	E	E	E	E
E (S. 144th)	D	D	D	D	D	D	D
F (I-5)	F	E/F	E/F	F	F	E/F	E/F

[a] *Peak direction southbound for Screenlines A through E and westbound for Screenline F.*

Source: The Transpo Group and CH2M HILL.

Corridors

Corridor LOS would improve on some roadways with implementation of the build alternatives. The primary roadways that would improve are I-5 north of the proposed SR 509 connection, SR 99 between South 188th Street and SR 516, South 188th Street west of SR 99, Des Moines Memorial Drive north of South 200th Street, and SR 516 west of SR 99. The South Access Road would have a localized affect on LOS along South 188th Street between 28th Avenue South and SR 99. LOS would improve under Design OptionsH0/H2-A for all of the build alternatives, because local access would not be available at South 188th Street. LOS would not differ between Design Option H2-B and the No Action Alternative.

Intersections

Intersection LOS would be substantially better under the build alternatives than under the No Action Alternative; however, many locations in the transportation analysis area would still operate at LOS E to F during the p.m. peak hour, particularly in the SR 99 corridor. The western portion of the transportation analysis area would have improved operating conditions, particularly in the Des Moines Memorial Drive/Marine View Drive/SR 516 corridor. Access to Sea-Tac Airport would be improved, although high volumes of local traffic would continue to use the South 170th Street entrance off of SR 99 under Alternative C3. LOS would vary slightly among the alternatives, and would vary most at the 28th/24th Avenue South intersection with South 200th Street. Under Alternative B, this intersection would primarily operate at LOS D, LOS C or D under Alternative C2, depending on the South Airport Link design option (H0/H2-A or H2-B), and LOS F under Alternative C3.

2.4.3 Accidents and Safety

In general, roadways with lower levels of congestion have lower vehicles accident rates than roadways with higher levels of congestion. In 2020, traffic volumes along the local roadways within the vicinity of the proposed project would be expected to be lower as traffic would shift from the local roadways to the SR 509 freeway and South Access Road. For example, the build alternatives would reduce future traffic volumes along SR 99, which would in turn reduce the potential for accidents. The proposed SR 509 freeway extension and South Access Road would be limited access facilities with higher safety design standards that typically yield lower accident rates than at-grade roadways.

The above findings apply equally to nonmotorized modes of travel. Lower levels of congestion around bicycle and pedestrian facilities imply safer roadways, even if the facilities do not change in other ways.

2.4.4 Travel Time

All build alternatives would reduce overall traffic congestion in the project area and would increase the use of SR 509. The SR 509 freeway extension to I-5 would improve travel times in the p.m. peak period direction (southbound) from south Seattle to Federal Way by approximately 10 minutes.

2.4.5 Other Modes of Transportation

Transit and High-Occupancy Vehicles

The build alternatives would provide additional facilities for use by transit and other HOVs.

Enhancements for transit would be included in the design of the alternatives. These enhancements could include ramp metering with HOV queue bypass lanes and direct ramps for transit into the proposed HOV lanes. The general reduction in traffic congestion and the additional HOV lanes would reduce transit travel times, improve schedule reliability, and reduce transit operating costs. The improved transit operations could lead to increased ridership.

Although improved facilities for transit and carpools would be provided for under all the build alternatives, the transit mode split and average car occupancy are expected to be the same for all build alternatives, including the No Action Alternative. Because of the improved HOV connections in the transportation analysis area, carpools would split between the I-5 and SR 509 corridors, resulting in lower volumes of carpools on I-5. Overall, travel times for carpools would be reduced.

Pedestrians and Bicycles

As traffic is diverted onto the SR 509 freeway extension conflicts with pedestrians and bicyclists on arterial roadways would be reduced. The existing nonmotorized facilities in the City of SeaTac would be maintained under the build alternatives. Many of the bicycle facilities and pedestrian routes in Des Moines would intersect with the build alternatives; however, the proposed project would not preclude their continued use.

Under Alternatives C2 and C3, the proposed project has the potential to improve the regional trail system. Alternatives C2 and C3 would disrupt the Des Moines Creek Park trailhead. WSDOT has committed to extending the Des Moines Creek Trail from the park to South 188th Street under Alternative C2, and would be willing to make this commitment for Alternative C3. The extension of the Des Moines Creek Trail would be one component that could be used in making a regional trail connection between southwestern King County and the Burke Gilman Trail in the City of Seattle.

2.4.6 Movement of Goods and People

Trucks

The amount of truck traffic in the transportation analysis area is expected to increase by approximately 2 percent per year during the period from 1999 to 2020. Currently, 75 percent of all truck movements occur between 6 a.m. and 6 p.m. Increased congestion would increase truck travel times and operating

costs, most severely during the off-peak period (9 a.m. to 3 p.m.) because of further spreading of the peak periods.

Truck access to the regional system would be improved under the build alternatives compared to the No Action Alternative. Lower levels of congestion would result in improved traffic operations. The SR 509 extension would provide an alternate truck route to the Ports of Seattle and Tacoma; truck travel times between the ports and their industrial areas would improve substantially compared to travel times under the No Action Alternative. The extension of SR 509 would reduce the travel distance between Seattle and Tacoma by approximately 1.2 miles, compared to using only I-5, and by approximately 1.7 miles compared to using SR 99 and I-5. (Additionally, the City of SeaTac, which is responsible for operation of SR 99, discourages its use as a truck route, and will not issue oversize or overload permits for SR 99.) Drivers traveling between Tacoma and Sea-Tac Airport would realize the largest reduction in travel distance. The build alternatives would reduce the travel distance by approximately 2.5 miles compared to the existing route along I-5 and South 188th Street.

Railroads

The Union Pacific and Burlington Northern Santa Fe Railroads have major rail lines that connect Seattle and Tacoma via the Green River valley. The tracks run north/south through the eastern part of the transportation analysis area near SR 181 (West Valley Road). There are no rail existing lines in the vicinity of the SR 509 corridor, so the build alternatives would have minimal, if any, impact on rail operations.

Air Travel

The Sea-Tac Airport Master Plan recently revised the air travel demand forecasts for the airport. Travel demand to Sea-Tac Airport in 2020 is a reflection of the total number of passengers and the amount of air cargo. The annual number of passengers forecast for 2020 is 44.6 million. The airport would generate approximately 155,400 vehicles per day and 8,100 p.m. peak-hour trips for 2020. This is an increase of more than 70 percent over existing conditions.

Under current conditions, approximately 57 percent of airport passengers travel to Sea-Tac Airport via the North Airport Expressway, 25 percent use South 182nd Street, and 18 percent use South 170th Street at Air Cargo Road. However, by 2010, based on the Airport Master Plan Update, approximately 60 percent of airport vehicle traffic is expected to access the passenger terminal via the North Airport Expressway, 20 percent from South 182nd Street, and 20 percent via South 170th Street. Because of the increased traffic to the south, traffic congestion at the airport entrances on International Boulevard under the No Action Alternative would increase substantially.

Access to Sea-Tac Airport would be substantially improved under the build alternatives. Travel times to and from the south would be reduced and direct access to airport facilities would be provided for residents to the south. In general, overall travel time for travelers using the new roadways would be reduced by approximately 10 minutes, thus improving access for trips to Sea-Tac Airport.

2.4.7 Added Access Analysis

The *Draft SR 509/South Access Road Access Point Decision Report* (CH2M HILL November 2002b) was prepared as a formal request to FHWA for approval of the new SR 509 interchange with I-5. Even though the report focused on the information required for the access point decision, the analysis also provided general observations regarding the operation of I-5 with implementation of the project.[2] The analysis of the report is based on Alternative C2; no substantial differences would be expected under Alternatives B or C3 because there would be no substantial difference in volumes along I-5 among the alternatives.

The access point decision analysis consistently shows that with the addition of the new SR 509 interchange, operations along I-5 would improve or maintain conditions found under the No Action Alternative. A portion of the I-5 mainline would operate at LOS F by 2020 under the No Action Alternative, but operations would improve to LOS E or better with the build alternatives. Operations would improve because added access to SR 509 would shift a substantial volume of traffic away from I-5 north of SR 516 and additional capacity would be added along the I-5 mainline. The additional capacity would be provided by the proposed auxiliary lanes, C/D lanes, and braided ramps near the SR 509/I-5 interchange with South 210th Street. The project would maintain or improve operations on all I-5 ramps compared to the No Action Alternative.

2.5 Anticipated Construction Schedule

If one of the build alternatives is selected, construction could begin in 2006 and be completed by 2013. Construction of the project would occur in four phases:

- Phase 1: Construction of the SR 509 freeway extension from South 200th Street to South 188th Street
- Phase 2: Construction of the SR 509 freeway extension from SR 99 to South 200th Street, and retaining wall construction along the west side of I-5 from SR 516 to South 204th Street

[2] The analysis was performed using HCM methodologies, and was supplemented by the FREQ simulation model.

- Phase 3: Construction of the I-5 improvements from the SR 516 interchange to SR 509 at the SR 99 crossing
- Phase 4: Construction of the I-5 improvements from the South 320th Street interchange to the SR 516 interchange

Environmental mitigation would commence prior to the relocation of utilities and construction of the roadway.

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